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INQUISITIVE JACK

AND

HIS AUNT MARY.

BY

PETER PARLEY.

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Frances Layton
Rokebys

INQUISITIVE JACK.

INTRODUCTION.

SHOWING THE NECESSITY OF EDUCATION.
ADDRESSED TO MY LITTLE READER.

ALTHOUGH I profess to deal in matters that may amuse my young friends, I have a constant desire that, while they are entertained, they shall be instructed. The only way to be happy—really and truly happy—is to be wise; and wisdom comes through teaching. I think I can make this very plain, if you will listen to me a few moments.

You know there are such people as savages—who roam wild in the woods, or dwell in wigwams, sitting upon the ground, and sleeping upon the skins of beasts; who have no

books, nor schools, nor churches; who have never read the Bible; who know nothing of Jesus Christ, nor of the ten commandments.

Well, what makes the difference between these wild, savage people, and those who live in good houses, in towns and cities, and have all the comforts and conveniences of life? Knowledge makes the whole difference, and knowledge comes by education. Do my little readers know that without education they would be savages? Yet it is really so. All are born alike—the child of the savage, and the child of the Christian: one grows up a savage, because its father and mother do not send it to school, do not furnish it with books, do not teach it to read and to write; the other grows up a Christian, because it is educated. Education, therefore, makes us to differ.

Now, what do you think of this? Do you consider that all children who hate books and instruction are trying to be like little savages? I hope none of my readers are so unreasonable. I hope they see that it is best for them to be Christians, and as far as possible from the savage state. I think one thing is very clear: our good Father in hea-

ven, whom we ought all to love and obey, did not intend us to be savages; but he has provided only one way to avoid it, and that is by education. He makes it our duty, therefore, as well as our happiness, to seek for instruction.

This design of our Creator is very apparent when we compare man with animals. Birds and beasts do not go to school; they are provided with all needful knowledge by that power which we call instinct. A little chicken, only a day old, will run about and pick up seeds, which lie scattered among the stones and dirt. How does the chicken know that seeds are made to eat, and that stones are not made to eat? How does the chicken distinguish the wholesome and nutritious seed from the dirt and gravel? God has taught it—God has given it a wonderful instinct, by which it is guided in the choice and discovery of its food.

But the infant has no such instinct; left to itself, it will pick up dirt, stones, pins—anything that comes in its way—and put all into its little mouth! The child has to be taught everything by its parents or its nurse.

It must be taught what is good and what is evil—what to seek, and what to shun.

The chicken runs about as soon as it is hatched ; the child must be taught first to creep, then to walk. The chicken, left to itself, though but a day old, will hide from the hawk that would devour it ; the child, if left to itself, would as soon go into the fire, the water, or the bear's mouth, as anywhere else. The chicken is guided by instinct—the child by instruction.

Thus it appears that, while instinct is the guide of the animal world, education is the instrument by which children are to reach their true destiny. God meant us to be educated ; and children who hate education, hate God's will and God's way ; they hate the road that leads to their own happiness. Think of that—think that when you resist instruction, you resist the will of Providence, and sin against your own peace !

There is another particular in respect to the mode in which the natural wants of animals are supplied, which may teach you the same lesson. They use no tools, no cooking utensils. The beaver is a natural architect,

and his instinct not only teaches him the art of house-building, but he has a set of tools ready furnished. He has sharp teeth, with which he cuts down trees, and divides them into proper lengths: thus his teeth answer both as hatchet and saw. So it is with the woodpecker; he never learnt a trade, or paid a shilling for tools—yet he knows how to chisel out his hole in a dry tree—and his bill answers both as gouge and hammer. The spider has no shuttle or loom; he never had a lesson in the factories—yet he weaves his ingenious web, and he sets it, too, so as to take his prey.



Surely Providence has taken care of these creatures in a wonderful way. And perhaps you think that God has been more kind to them than to human beings; for while He teaches the animal world, He leaves children

to schoolmasters; and while He teaches the beavers and the birds their trade, and furnishes their tools, gratis—boys must serve seven years to learn a trade, and pay for their tools when they have done!

But let us look a little farther. It is true that if children refuse to learn they remain ignorant, and like savages: but children can learn if they will. Education is offered to them—and if it is improved, what is the result? Look around, and see those who have obeyed the will of God, and who have improved their faculties by education—see what they are and what they have done. The instinct of the beaver is very wonderful; it enables the beaver to build mounds of earth, wood, and stone, which serve as its abode; and it enables him to provide his food of roots, and grass, and fruits. But this is the whole stretch of instinct.

Let us now look at the results of education, operating upon the faculties of man. Look at London, or Paris, or any other fine city. How many houses—and if we go into them, how beautiful—how convenient! Look at the paved streets—the pleasant side-walks!

Go into the shops, and examine the beautiful articles there provided for use and ornament. Go into the museums, and see the wonders there, gathered from the four quarters of the globe. Go down to the waters and see the ships, made to plough the mighty ocean, and hold intercourse with the ends of the earth. Go to the churches, and see the people holding communion with that God who built the earth, and spread out the heavens. Open the Bible, and read the wonders of revelation—the mighty plan of man's salvation. Go to the fireside, and see the comfort, the peace, the happiness which are there: and remember that all these things, every one of them, is the product of education. Oh, who then would be content with instinct, merely because it is easy, and costs nothing; and spurn education because it requires effort?

Education, then, is a great and glorious thing; but remember that you must take advantage of it. The old adage says, "One man may lead a horse to water, but ten can't make him drink." It is so with children in education: it is easy to send them school, easy to put books before them, easy to give

them good counsel; but if they will not try to learn, they will not learn: you cannot teach an unwilling mind. When I was a boy, I caught a blue jay, and put him in a cage; but he would not eat. I got hold of his head and opened his mouth, and put food into it, but he would not swallow; and so he died! Now this is just the way with some boys and girls—they will not take knowledge into their minds; they reject good counsel even if you cram it down.

Well, now I am going to tell you the story of INQUISITIVE JACK, who, by his own efforts, made the most of a very little education. I present his example to your consideration, and hope you may learn by it to accustom yourselves to *observe* and *think*—how to gain knowledge and make it useful.





CHAPTER I.

JACK'S MODE OF SATISFYING HIS CURIOSITY—THE ANT-HILL.

HERE sits INQUISITIVE JACK, with his book, for he has now learned to read. It is evening, and his mother has gone to see one of the neighbours, while he sits by the cradle of his little sister, to take care of her, in case she wakes up.

But I must tell you about Jack, when he

was quite young, and before he could read. Almost all children have a deal of curiosity, and they ask a great many questions of their parents and others. As for instance: What makes the fire burn? Why does the sun shine? Who made the moon? Why do cats have ears? Where does the blaze go when you blow out the candle, &c.?

Now Jack had his share of curiosity too; but he took a way to gratify it not common among children, and it is a very good way; I am going to tell you about it. He lived in the country, and his father had several acres of land around the house. Here were high rocks, and some woods, and a little valley where there was a small pond. There were also a field and a garden.

Now Jack had a fancy for roaming about his father's grounds, when he was a very little child. His greatest pleasure was to go alone over the rocks, and through the woods, and to the little valley. He delighted particularly to go to the pond, and see the frogs, and fishes, and tadpoles and leeches, and insects that made their home there. He would stand for hours upon the rocks, quite ab-

sorbed in noticing the manners and customs of these inhabitants of the pond.

Now Jack was so much in the habit of living out of doors, and walking about, that the objects he met with became, as it were, companions to him. He never seemed to feel alone, if only some flowers, or bushes, or trees



were around him. He was never impatient, never restless, never in a hurry, while sauntering among natural objects.

I will tell you an instance, to show how he enjoyed himself when he was among the bushes.

Just after he had learned to talk, a young lady who was staying at his father's house,

happened to go into the woods where she found Jack. He was sitting by the side of a whortleberry bush which was covered with green whortleberries. "What are you doing here?" said she to Jack. "Jack is waiting for the whortleberries to get ripe!" was his reply.

Now, perchance, some of my sharp little friends will think Jack a silly boy; but wait



lads and lasses, and hear his story before you decide. I have said that he had a way peculiar to himself of gratifying his curiosity. Instead of asking a string of questions, one after another, without waiting for a single answer, he was in the habit of *observing* things and *investigating* them. In this way he gained a great deal of knowledge.

Perhaps you may wish to know what I mean by *observing* and *investigating*. I will try to make you understand.

One day in spring Jack was in the garden, digging up a place to sow some pepper-grass seed. By and by he happened to see an ant running along with a piece of a leaf in his mouth. So he stopped his work and looked at the ant. The little insect paddled along with his six legs very fast, and soon came to a little hillock of earth, about as large as a wash-hand basin turned upside down.

It seemed to consist of a heap of particles of sand. Now Jack, instead of running away to tell his mother about what he had seen, remained to *observe* and look into the matter, or *investigate* it. On looking at the little mound, he saw there were a number of holes in it; and into one of them the little ant with the leaf, plunged head first. "I wonder where he is gone to?" said Jack. In a minute or two several ants came out of these holes, and some of them had small white things that looked like eggs. These they laid down in the sun, and went into their holes to fetch more.

Every ant seemed to be busy about something. Jack saw several ants go away from the hill. He determined to observe them, and find out what was going on. He watched one fellow particularly, and he went to the distance of as much as three yards. There was a large dead fly. The ant went to work, gnawed off his head, took it in his teeth, and scrambled back to the hill, and down he went into one of the holes.

In a few seconds he came back, made another journey to the dead fly, sawed off another portion, and transported it to the hill. In this way he kept going out and in, and in the course of an hour, the ant had carried off the whole carcase of the fly. "Well," said Jack to himself, "I suppose that fellow is the butcher, and supplies the ant-folks with meat!"

While all this was going on, Jack had time to observe and investigate other things. He saw one ant go as much as a dozen times to a dandelion, and load himself with the yellow powder which he gathered from the blossoms. "I suppose this must be the baker!" said Jack. He saw several climb up the stalks of

tall plants, to get the juice or honey from the blossoms. "These fellows seem to be the grocers!" said the boy.

By and by, Jack saw an ant going along, when he chanced to arrive at another hill. Immediately he began to smell about this way and that—but an ant upon the strange hill saw him. In he went, at a hole, and in a few seconds he sallied forth with five or six others in his rear. They darted forward, heels over head, towards the intruder, the strange ant. He had become aware of the danger, and was galloping back towards his own hill as fast as his legs could carry him. Jack looked on with as much interest as if it had been a fox-chase.

The little red ant that had stirred up this affray went straight ahead, and pretty soon came to a ball of earth as big as a walnut. Deeming it better to climb over than to go round it, he began to mount, when the leader among the pursuers, a large black ant, stuck his teeth into him. The red ant turned round and grappled; both fell backwards, and rolled upon the earth, when there followed a great deal of scratching and biting.

At last little Red escaped—having given Black a severe wound. The others now came up, and the chase was resumed. By and by the party approached Red's home. Here he met some of his friends. They carried the alarm to the hill. In a few seconds, at least fifty ants, all red, sallied forth. "I imagine these are the soldiers!" says Jack—and so they were, sure enough.

They took the direction toward the party that had chased our little hero, Red. Black had now recovered, and was at their head. He mounted a small stone to reconnoitre and see the force of the enemy. He perceived that the force was too great, and giving the alarm to his party, they all scampered back, jumping, galloping, and tumbling, one after another.

The army of the Reds pursued, and finally approached the city of the Blacks, close upon the heels of the ants that had insulted and abused their fellow-citizen. The Blacks were soon made aware of the danger that threatened them. The fellows that had been out on the scout, thumped on the hill, and forty or fifty stout fellows rushed forth. They

marched toward the regiment of Reds, and now a fierce battle ensued.

It was claw to claw—teeth to teeth. They pulled and hauled—bit and scratched; and after a few minutes, the battle was over. One large black ant was killed. He was cut into four pieces, and the Reds carried him home, no doubt for a feast.

While Jack was busy in observing and investigating these things, he heard his mother's call. Though he had been engaged at least four hours in observing these things, he was not weary, and would gladly have staid longer; but being an obedient and good boy, he forthwith went to his mother, and found his dinner ready. It was one advantage of his morning exercise, that the fresh air had given him a good appetite.





CHAPTER II.

THE STORY OF THE DEAD HORSE-FLY.— AUNT MARY.

I HAVE told you in the preceding chapter how Jack watched the ants in the garden. He was very young at this time, and having never been to school he did not even know how to read; but by observing and investigating things, he had obtained a great deal of knowledge.

As he now learned something about the ants, he desired to know more: so he used very often to go and look at them. He did not stamp with his heel on the ant-hills, and

crush the houses of the little busy creatures. Some boys do this, and think there is fun in it; but Jack looked upon all innocent and harmless creatures with a feeling of affection, and he loved rather to help them, than to kill or disturb them.

One day he found a large dead horse-fly; so he took it and laid it down at a little distance from the ant-hill, and soon saw one of the ants come near the fly. He took hold of it and tried to carry it; then pulled and hauled it with all his might; but finding that he could not manage it, he set off for the hill. It was as much as two yards that he had to travel, but he very soon got to his journey's end. He there met several of his companions. He went close to them, and seemed to touch them with his little feelers. Immediately four of them set off with him, and went to the dead fly. Jack did not hear the ant speak, and, perhaps, he had no voice; but it was quite plain that he in some way told his friends what he had found, and that he wished them to go with him.

When they got to the dead fly, they took hold of it, and began to drag it towards the

hill. It was twice as big as all the five ants put together; but they jerked, and pulled, and twitched, and it was really quite wonderful to see how fast they got the carcass along over the rough earth. Every ant did his best: there was no lazy fellow among them, skulking and shamming so as to put off the hard work upon his companions.

In a very short time, the ants had brought the fly to the hill. As they approached, great numbers ran out, to see what was coming. In a few seconds all was life and bustle, and it really seemed like a city when some great sight has brought all the people into the streets.

But the ants did not spend their time in gazing: immediately they began to cut up the fly, for he was too big to be got into one of their houses. One sawed off a leg, another a wing, and another the head; each carrying his piece into the hill. In the space of about five minutes the fly was cut to pieces, and stowed away in the city of the ants.

Jack was greatly delighted with what he saw. Every evening he used to tell his father and mother what he had observed during the

day, and they were always pleased with his simple stories.

But Jack had an aunt, whose name was Mary, and who, having no husband or children to take care of, spent a great deal of her time in talking with him. Whenever he met with anything curious, he used always to tell her. She was not only kind to Jack, but she had read a great deal, and was therefore able to give him much instruction.

Jack had got so much interested in the ants, that he now begged his Aunt to go with him and see them. She agreed to go the next day, and Jack went to bed full of pleasure at the idea of visiting his little insect-friends the next morning with his Aunt Mary.



CHAPTER III.

ANOTHER VISIT TO THE ANT-HILL.
HONEY-DEW.

As soon as breakfast was over, the next day, Jack and his aunt set out to visit the ants in the garden. Jack soon pointed out a hill, which he had observed before, and they both sat down to watch the little creatures at their work.

As usual, all seemed to be busy. Some appeared to be occupied in bringing out the eggs, which they laid in the sun, so that they might hatch the sooner. Some were engaged in cleaning out the house, for they were seen to bring out small pieces of sand, which they carried to a little distance, and threw them away. One was seen to come up with a large piece of earth, which he rolled along with much difficulty.

While a part of the little people were thus engaged in housewifery, others appeared to be bringing food together. Sometimes these

brought flies and pieces of insects ; sometimes they appeared to have filled their stomachs, and when they met their friends who stayed at home, they would put a part of their food into their mouths, and feed them, as a mother does a child.

As I have said, aunt Mary had a good deal of knowledge, and she had heard that ants sometimes get a kind of honey from other insects. She was very curious to see this herself. So she watched some of the little



creatures, and observed that they went to some large plants that were growing near. They ascended the stalks, some of which were covered with what is called honey-dew, a substance supposed to be deposited by a very small sort of insects, which live in great numbers upon vegetables.

Many of the ants stopped to eat this honey-

dew, which they seemed to be very fond of; but others, not finding any of this on the stalks, mounted to the full-blown flower, where they found numbers of the little insects imbedded in the yellow down. The ants immediately began to suck the honey-dew from them, and what was wonderful, these creatures remained quite still, and seemed pleased to have the ants lick the honey off them!

This sight gratified Jack and his aunt very much, and they spent a long time in watching the operations of these curious creatures. After spending two or three hours very pleasantly, they went to the house. Aunt Mary then got a book and read something about ants to Jack. I will tell you a few of the wonderful things she read to him.

There are a great many kinds of ants; some are almost an inch long, and others are not bigger than a grain of sand. In some countries the ants build hills twice as high as a man's head. In Africa there are white ants, that devour trees, and they are so numerous that it is dangerous for men to go among them, unless several can go together and destroy them at once.

The little garden ants are very harmless ; they not only eat up a great deal of the honey-dew deposited upon plants, and which would otherwise injure them, but they also devour a great deal of matter that would putrefy and make the air unwholesome.





CHAPTER IV.

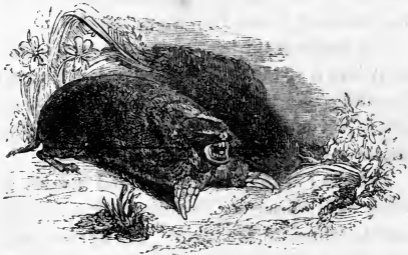
A STORY ABOUT BEETLES.

ONE day, as Jack was going along in the field, he saw a dead mole lying upon the ground. He took it up, and admired its soft fur, and the rays upon its nose, making it look in shape like a star. He looked also very carefully to see if it had eyes, for he had been told that moles are blind.

After looking all over the head of the mole, Jack at last discovered two little eyes, as black and shining as beads, very near the creature's nose. They were deeply hidden in the fur, and for this reason it is that people say that a mole is blind. Jack, by investigating for himself, discovered the truth, which

is, that moles have eyes. Their eyes are so small, and so imbedded in fur, because if they were larger, they would be exposed to injury, as the creature lives under-ground, and digs a great deal in the earth.

Having examined the mole for some time, Jack threw it down, and went his way. About two or three hours afterwards, he was coming back the same path. As he was



passing the dead mole, he noticed that it appeared to be sunk in the ground. He stopped, and looked at it attentively. After a while, he saw a large beetle creep from under it, and run round it.

This attracted Jack's attention, and kneel-

ing down, he watched carefully to see what was going on. After looking about a little, he noticed that there were four or five beetles, all at work, digging a hole under the mole, into which the creature was gradually sinking.

He lifted up the mole a little, so that he might observe them more carefully; but the creatures did not seem to mind him. They went on with their work, digging away the earth, which they threw out at the sides. It was amusing to see how they toiled.

The heads of the beetles were shaped somewhat like a spade. With these they dug up the earth, and then clawed it away with their feet. Never did a set of men digging a cellar appear more active and efficient.

Jack had always before disliked beetles as being ugly, disagreeable things; but now he was delighted to see them. He immediately ran off to get his aunt Mary to come and observe what was going on. She was very busy, but Jack persuaded her to go with him.

They soon came to the spot, and his aunt now saw that what Jack had told her was all true. The beetles were, indeed, burying the

mole. "But what are they doing it for?--are they sextons?" said Jack.

"They are called *burying beetles*," said the aunt; "but, Jack, I shall leave you to find out yourself what they are burying the mole for." So, after a time, Jack and his aunt went away. The next day Jack went to the place, but the mole was not to be seen! There was a little spot of fresh earth where it had lain, but that was all.

Jack began to dig away the earth a little, with his fingers, and about two inches below the surface, there was the mole. The beetles were all around the carcase, making a feast of it. Jack covered up the hole, and left them to themselves.





CHAPTER V.

SPIDERS. HOW THEY MAKE THEIR WEBS.

THERE are a great many people who imagine that such little things as bees, butterflies, spiders, and other insects are unworthy of their notice; but this is a great mistake. Inquisitive Jack, the hero of our story, did not fall into this error. He had an inquiring mind, and nothing was beneath his observation.

One morning, very soon after the sun had risen, he was walking along among some bushes; it was early summer, and a heavy dew had fallen. As he was going along, the thread of a spider, strung from one bush to another, came across his nose, and he broke it as he passed along.

Soon after this he met with other instances in which the spiders' threads were extended from one shrub to another. Now Jack was always asking himself how such and such a thing is done; and he therefore began to inquire how these spiders could stretch a line across from one tree to another; for he observed that these threads were sometimes ten or even fifteen feet from the ground, and that they extended often to as great a distance from the branch of one tree to that of another.

Jack's habit of investigation had made him very ingenious in explaining things; but here was something quite beyond his reach. He could in no way explain what he saw.

"Strange," said Jack to himself, "that these little insignificant spiders should know more than I do! I like to find out things

myself, but I cannot explain this; so I must go and ask aunt Mary about it."

As Jack turned on his heel to fulfil his resolution, he noticed another spider's web covered with dew. His attention now being excited to the subject, he turned round, and saw as many as fifty others, set like nets among the bushes and the tall grass.

Jack had seen these things before, but his attention had not been excited, and therefore he had not investigated them. He now set about the inquiry, with all the ardour of youthful curiosity.

He spent some time in observing the different kinds of webs, and then proceeded to his aunt to ask her about them. She accordingly sat down, took her knitting-work, and while she worked briskly at her needles, she gave the information he desired in the following conversation.

Jack. Oh! aunt Mary, I have found something so curious! Do you know I have been looking at the spiders, and I want you to tell me about them. Pray where do they get their threads? and how do they weave their nets so curiously? and how do they

fasten their threads to the leaves? and how do they stretch them from one tree to another? and what do they do it all for, for fun or for business?

A. One question at a time, if you please, Jack.

J. Why I want you to tell me all about the spiders.

A. But where shall I begin?



J. Oh! I do not care where you begin, I want you to tell me everything.

A. Well Jack, I will tell you what I know, and I shall answer your last question first. The spiders, I suppose, make their nets both for fun and business, for pleasure and profit. These creatures live chiefly

upon flies, but they are themselves destitute of wings. They are, therefore, provided with the means of making nets, by which they can catch as many flies as they want. Thus you see that God, who made the spiders, has provided them with the means to get a living. So it is, dear Jack, that He provides for everything: the wants of even the insects are supplied; nothing is overlooked.

J. I thank you, aunt Mary, for that idea; it makes the spider much more interesting when we consider it as the work of Providence.

A. Yes, that is true, my boy. Now as the spiders spread their nets in order to get a living, or for business, as you express it, they do it also for pleasure—for business and pleasure usually go together. There is always more real satisfaction in doing something that is useful than in mere idle sport. It is so with human beings, and no doubt it is so with spiders.

J. Well, aunt Mary, you have answered one of my questions; but pray tell me where the spiders get their threads. Are any of them rope-makers?

A. Yes, Jack, every one of them. Each one spins his own thread, and this is the most wonderful part of the whole story. You observe that the lower part of a spider's body consists of a round ball. In this the insect has a gummy substance which is spun into thread. It somewhat resembles melted glass, for a coarse thread of it is brittle when it becomes dry; while a fine thread is as flexible as the fibres of cotton or silk. The manner in which this gum or paste is twisted into threads has occupied the attention of many philosophers. By looking at the process through magnifying glasses, it has been discovered that even the finest thread in the web of the spider consists of many hundred strands. These are drawn out from the body of the insect in a soft state, like paste, but they immediately unite and form one compact cord. In some instances it is said that a single thread consists of four thousand strands.

J. But that must be a mistake!

A. No, it is certainly true. There are many things invisible to the naked eye, which are revealed to us by the aid of mag-

nifying glasses. With the naked eye we cannot see more than a thousand stars in the sky; with a telescope we can see millions of stars. With the naked eye we can see nothing but fibres in the stalk of a flower, but by the aid of a microscope we can see there myriads of creeping things. So by the aid of a microscope we can discover the thousand strands of which the spider's thread is composed.

J. Well aunt, I am not going to dispute, for I know that you have always a good reason for what you say. But pray tell me how do the spiders tie their lines to the leaves and grass?

A. They stick them on with a kind of glue, with which nature has provided them.

J. Well, how do they stretch their lines across from one tree to another?

A. When a spider wishes to build a bridge from one shrub to another he climbs up to a certain height, and draws out a long loose line, taking care to have it in such a situation that the wind will carry it across to some other tree. The end of the floating line is provided with a gummy substance, and

fastens itself at once to whatever it touches. When the spider finds that his line has caught he pulls it to see if it is fast, and then makes a bridge of it, and crosses over in perfect safety. He now goes backwards and forward, each time adding a thread, for the purpose of giving it strength. This line is like the rope to a fisherman's net, and the spider immediately begins to weave his net upon it. He proceeds to set several strings round, somewhat like the spokes of a wheel, and these he binds together by a series of circular threads. When the whole is done, he weaves a hole in some sly corner, into which he retreats; but the moment that a fly gets entangled in his net he darts forth, binds him round and round like a prisoner, and carries him off to his den.

Such was the main part of the dialogue that passed between Jack and his aunt. The boy expressed great satisfaction for what she had told him, and then went away to take another walk in the fields.



CHAPTER VI.

JACK VISITS THE BEEHIVES.

ONE day Jack was going along by a row of beehives, which belonged to his father, when he observed an unusual confusion among the bees of one of them. A great many bees were going in and out at the holes of the hive, buzzing and seeming to be in the greatest flurry. Besides this, the bees had

collected on the outside of the hive in a great mass, at least an inch deep in one place.

Jack had seen the beehives so often that he had not thought much about them; but now his attention was fixed. He stopped and began to look at what was going on, particularly among the bees of the hive we have mentioned. "Perhaps it is Sunday," said Jack to himself, "among these creatures; or it may be election day, and they are going to choose a governor or president. Oh, I recollect, aunt Mary told me once that the bees were governed by a queen; and perhaps they are now going to choose one!"



Saying this, Jack sat down upon the grass and creeping pretty close to the hive, quietly looked on. Though those bees which had settled into a heap were quiet, there were many who were flying hither and thither—

up and down—round and round—in and out—appearing to be brimful of something very important, but really doing nothing after all. With them it was all buzz, buzz, buzz!

Jack had looked on for about half an hour when he saw an unusual agitation in the bees that had congregated upon the outside of the hive; they began to flutter their little wings, and run this way and that. All at once a portion of them took flight, and rising about forty feet in the air, whirled round and round for a few minutes and then streamed away upon the wind. They were followed by others, so that a continued line of bees was distinctly visible in the air.

Jack, greatly excited, followed the run-away bees till, at the distance of about three hundred yards, he found that they began to light upon an apple tree. Here they collected very fast, and he soon saw them gathered in a large dark mass upon one of the limbs. He now ran home and told his father what was going on.

Jack's father set out with another man for the scene of action, having provided a new hive and a brass kettle. When they came to

the apple tree they began to beat the kettle, thinking that such music is apt to induce bees when swarming to settle down the more readily. The whole company soon arrived and alighted upon the limb. They were collected one upon the other, and the whole mass looked about as large round as a man's arm.

The new hive was now placed upon a bench beneath the tree, and some honey was put near the holes. At evening the limb to which the bees were still clinging was carefully cut down and placed near the hive. In the morning the bees began to leave their place upon the bough and to enter the hive. In a short time they had all taken up their abode in it, and immediately they began to build cells, in which to store their honey. That evening the hive was removed and placed upon the same platform as the other hives. Its inhabitants seemed all pleased with their new home, and very soon they had stored it with honey.



CHAPTER VII.

THE BEES.

IN the preceding chapter we have told how Jack became interested about the bees: we shall now relate some of those curious things which his aunt Mary told him respecting the manners and customs of these ingenious and wonderful insects. The habits of bees have been carefully studied by many learned and curious persons; but M. Huber, a Swiss gentleman, has done more than any other man to make us acquainted with them. And yet Huber was blind! His wife assisted him in

his observations ! and thus by making use of her eyes, he was able to pursue his studies with great success.

There are three different kinds of bees in every hive. First, the labouring bees, which make up by far the greater number, and are thought to be neither male nor female, but merely born for the purposes of labour. The second sort are the drones ; they are of a darker colour, longer, and more thick by one third than the former ; they are supposed to be the males, and there are not above a hundred of them in a hive of seven or eight thousand bees. The third sort is much larger than either of the former, and there is never but one permitted to live in a swarm. These are called queen bees, and they lay all the eggs from which the whole swarm is hatched in a season.

In examining the structure of the common working bee, the first thing that attracts our attention is the trunk, which serves to extract the honey from flowers. It is not formed like that of other flies, in the shape of a tube by which the honey is to be sucked up ; but like a broom to sweep or a tongue to lick it

away. The animal is furnished also with teeth, which serve it in making wax, a substance which is gathered from flowers, like honey; it consists of that dust or farina which contributes to the fruitfulness of plants.

Every bee when it leaves the hive to collect its precious store enters into the cups of the flowers, particularly such as seem charged with the greatest quantity of this yellow farina. As the animal's body is covered with hair, it rolls itself within the flower and becomes quite covered with the dust, which it soon after brushes off with its two hind legs, and kneads into two little balls.

In the thighs of the hind legs there are two cavities edged with hair, and into these, as into a basket, the animal sticks the rolls or pellets which it has collected. Thus employed the bee flies from flower to flower, increasing its store and adding to its stock of wax until the ball upon the thigh becomes of considerable size, when it returns, making the best of its way to the hive.

The lower part of the body or belly of the bee is divided into six rings, which shorten or

lengthen the body by slipping one over the other. It contains within it, besides the intestines, the honey-bag, the venom-bag, and the sting. The honey-bag is as transparent as crystal, containing the honey that the bee has brushed from the flowers; of which the greater part is carried to the hive and poured into the cells of the honey-comb, while the remainder serves for the bee's own nourishment; for during the summer it never touches what has been laid up for winter.

The sting, which serves to defend this little animal from its enemies, is composed of three parts; the sheath and two darts which are extremely small and penetrating. Both the darts have several small points or barbs, like those of a fish-hook, which render the sting more painful, and make the darts rankle in the wound. Still, however, this instrument would be a very slight defence, did not the bee poison the wound. The sheath, which has a sharp point, makes the first impression, which is followed by that of the darts, and then the venomous liquor is poured in.

The sheath, with the barbs, sometimes sticks so fast in the wound that the animal

is obliged to leave it behind ; in consequence of which the bee soon after dies, and the wound is considerably inflamed. It might at first appear well for mankind if the bee were without its sting ; but upon recollection it will be found that the little animal would then have too many rivals in sharing its labours. A hundred other lazy animals, fond of honey and hating labour, would intrude upon the sweets of the hive ; and the treasure would be carried off for want of armed guardians to protect it. As the bee lays up a most delicious store, it was obviously necessary that it should have some extraordinary defence, and so the sting was provided.

The most interesting point of view in which we can regard bees, is not as separate individuals, but as societies or communities. In this light they indeed astonish us. It being necessary that their hives should be tight, the first thing they do is to stop up all the crevices with a kind of resinous gum, which resists the weather.

They then proceed to form their cells, which we call honey-comb. These are built in hexagons, or six-sided figures ; and ma-

thematically tell us that this form is the very best for the purpose, as it unites the greatest strength with the greatest capacity. The philosophers found out this fact by deep study—but who told the little bees of it? They never went to college to learn mathematics. How then should they always build their cells in hexagons?

This was one of the questions put by Jack to his aunt Mary, and she answered as follows: “Bees are provided with wonderful knowledge, which we call instinct. It is born with them, and is a part of their nature, given to them by God who made them. He knows everything—he knows that a hexagon is the best form for the bees to build their cells in, and so he furnished them with an instinct, which leads them to follow this method of building. Is it not interesting to see the Almighty thus displaying his knowledge and skill, for the benefit of even the little bees?”



CHAPTER VIII.

MORE ABOUT THE BEES.

THE queen is the mother of all the young bees, for she lays all the eggs from which young ones are hatched. When she wishes to lay the eggs she goes to the cells which have been made by the workers, and having taken a peep into them, drops in her eggs, taking care to distribute them properly. It is said that a single queen will lay six thousand eggs in a month, and sometimes one hundred thousand in a year!

The eggs are very small, of a blueish white colour, and of a long oval shape. They remain four days, and are then hatched. At first the young bee is only a white worm or maggot, and may be seen floating at the bottom of the cell, in a whitish fluid, furnished by the nursing bees. It grows rapidly, and as it lengthens coils itself into a ring. It is then called a grub-worm or larva.

The little worms are carefully attended by

the nurses, and as soon as these approach, and touch them they open their minute jaws and receive their food. This consists of a kind of soft pap, formed of the farina of flowers, and partly digested in the stomachs of the nurses.

“Really,” said Jack, “the bees seem to be very rational kind of creatures. But what makes me wonder very much is how they should know anything without books or instruction?”

“That is indeed very wonderful,” said his aunt, “and we can only explain it by referring it to that admirable teaching of their Creator, called instinct.”

When the little worms are about four or five days old, and have grown so large and fat as to fill their cells, the nurses seal them up with a brown cover of a conical form. No sooner does the larva find himself shut in than he begins to work up and down, and to wind round himself fine silky threads, which he draws in two strands from the middle part of his under lip. Round and round he goes, nor does he stop till he has woven about himself a thin pod or pellicle just fitting the

cell. In this condition the creature is called a *nymph* or *pupa*.

The working bee is about thirty-six hours in spinning and weaving its cocoon or covering. It thus spends about three days, during which a wonderful change is going on. When in the larva state, the creature has no wings or legs; it is a simple worm. But while it is in its swaddling clothes the legs and wings are gradually formed; and at the end of twenty-one days from the laying of the egg, it gnaws through its covering, and comes forth a winged insect, destined to sport in the air and hold a joyous revel amongst the flowers. As if impatient for sport, the insect goes forth soon after its birth, and it is said that it may be seen returning to the hive, loaded with wax, the same day that it becomes a bee!

While the young bees are in the larva state the utmost care is taken of them. If any member of the hive is rude or careless towards the egg or worm, or the yet unhatched pupa, the nurses are very angry. But when the pupa has gnawed his way through his covering he seems to be regarded as of age,

and able to take care of himself. The tender care of the nurse now ceases altogether; and the working bees scramble over his head without scruple. While he is still weak, and scarcely strong enough to get out of his cell, as if for the very purpose of making him acquainted with the hardships of life, the rude multitude of bees rush headlong by, often knocking him down, and sometimes giving him a severe poke in the side, or a thump on his head. How much like human creatures the bees are!

I have told you how the working-bee nymphs are hatched; the complete bee is formed in twenty-one days. The process is nearly the same in respect to the queen bees and the drones; the former, however, are hatched in sixteen days, and the latter in twenty-five from the laying of the eggs.

There is one thing in respect to the royal bees, or queens, too curious to be omitted. When one is nearly ready to emerge from her cell, the bees gnaw the covering so as to make it very thin. They then eat a small hole through it, and feed the pupa for a few days. She is thus kept a prisoner, and during

this time she sings a faint song, called *piping*. You may, if you like, imagine these to be the words of her song.

LAY OF THE INFANT QUEEN BEE.

O let me out
My masters—pray.
O let me out
To day—to day!

Oh let me out
To try my wing,
To run about
And dance and sing.

Oh let me out
To taste the breeze,
And I will bless
Ye, pretty bees!

Oh let me out
To see the bowers,
Where honey dwells
In golden flowers!

Oh let me out
For I'm a queen—
A pretty bee
As e'er was seen!

In spite of her petition, she is generally detained for four or five days after she begins to sing.



CHAPTER IX.

MORE ABOUT BEES.

AFTER the swarming season is over, a general massacre of the drones in the hive takes place. This usually occurs toward the latter part of July. The unfortunate victims evidently perceive their danger; for they are now seen darting in and out of the hive, and passing from one place to another, as if afraid of being seized.

When the working bees meet these drones, they fall upon them and plunge their stings into their bodies. The wounded drones generally expand their wings and expire. Some of them struggle hard for life, and some escape from the hive to starve abroad, but they are all slain at last.

This destruction of the drones may remind us of the old Spartans of Greece, who sacrificed everything to the thrift and prosperity of the state. The beehive may be considered a little monarchy, in which the great object is to increase the wealth of the community. The drones having provided for the due increase of the bees, can no farther contribute to the prosperity of the little nation. On the contrary, they will not work even so much as to obtain their own food; they still devour a portion of honey, and thus diminish the general stock which is laid up as a provision against the coming winter. For the interest of the community at large, the drones are slain without mercy.

The swarming of bees may be compared to the emigration of a great number of people from one country to form a colony in another.

In the winter, at least three fourths of the bees in the hives usually perish. But the amazing fruitfulness of the queen more than supplies this waste, and by Midsummer, the hive is usually too full for all its inhabitants to be comfortable.

The swarm is very careful to select a fine day for its emigration. They usually take one of the young queens with them, and, if by any chance the swarm passes off without a queen, they always return to the hive. While swarming, bees are generally peaceable, and may be hived without difficulty.

A writer upon bees tells the following interesting story: "A little girl of my acquaintance was greatly afraid of bees, but was completely cured of her fears by the following incident. A swarm having come off, I observed the queen alight by herself at some distance from the hive; I immediately called my little friend that I might show her the queen. She wished to see her more nearly; so, after having caused her to put on her gloves, I gave the queen into her hand.

"We were in an instant surrounded by the whole swarm. In this emergency, I encou-

raged the girl to be steady, bidding her remain silent and fear nothing. I then made her stretch out her right hand which held the queen, and covered her neck and shoulders with a very thin handkerchief. The swarm soon fixed upon her hand, and hung from it, as from the branch of a tree. The little girl was delighted above measure at this novel sight, and was so entirely freed from all her fears that she bade me uncover her face. At length, I brought a hive, and shaking the swarm from the child's hand, it was lodged in safety, without inflicting a single sting."

Bees are subject to several diseases; among which *vertigo* is the most remarkable. This causes great lassitude or weakness of the hind legs, an irregular mode of flying, and often produces death. The enemies of bees are numerous, among which we may mention birds, poultry, mice, wax-moths, slugs, hornets, wasps, ants, and spiders. Of all these, the most destructive are wasps, which often enter the hive, and as one wasp is a match for three bees, they devour great quantities of honey.

Great attention has been paid to the rearing of bees, and it has been found advantageous to remove them occasionally from one place to another, so that they may obtain fresh pasturage. A gentleman once had a swarm which weighed but five pounds when he removed it to Dartmoor Heath; at the end of two months, it was increased in weight no less than twenty-four pounds!

Bees are supposed to have some means of communicating with each other by sounds. The two horns which come out from the head below the eyes, called antennæ, are supposed to answer the purpose of ears, and to convey sounds as well as to accomplish some other objects.

Bees, as well as ants, are often seen to meet and cross their antennæ, and then proceed to act as if important information was thus imparted. When the queen of a hive is lost, the intelligence is spread with such rapidity that twenty thousand bees are informed of the fact in the space of a few hours,—a circumstance to be explained only by the supposition of something like language, in use among them.



CHAPTER X.

SOMETHING WORTH KNOWING.

I HAVE said before that, when Jack became interested in the subject, he did not like to leave it till he knew all about it. He did not, like some little people, proceed from one object to another, amusing himself for a moment. He was more like the little insect of which we have told so long a story—the bee—which, when it alights upon a blossom, scrapes out all the honey, and then stores it away in cells for future use. So it was with Jack. He studied one subject at a time,

made himself master of the knowledge it afforded, packed it away in the cells of his memory, and then was ready to set about something else.

Well, on account of this trait of character, he would not leave the subject of bees until he had extracted from his aunt Mary all she knew of the subject. I have already told you many things which he learned, but there are many others which I have not related. I must now tell you a few of these, and then we will proceed to something else.

Jack had a notion, which is common to children, that all domestic animals were naturally tame; and he was greatly surprised to learn that dogs, cats, cows, hens, pigs, horses, and even bees, were originally wild, and had been brought into their present state by the arts of man.

In nearly all countries there are swarms of wild bees, which have their abode in the forest. Their hive is the hollow trunk of some aged tree. Here they build their cells and store their honey. The native flowers of the forest, of the valley, and the mountain, of the hillside and the lawn, afford them a supply of

their delicious food, not only for the daily meal, during the warm season, but for the stores of winter.

It is a part of the plan of the benevolent Creator, that every portion of the universe shall be filled with life, so that happiness may everywhere abound. Even where man has not yet made his way in the wilderness and the solitary place, there are the flowers, with their honey, and there, amid other insects, is the busy, happy bee, to gather it. How vast must be the field of enjoyment which the Omniscient eye surveys, if even the study of insects unfolds such a view as is here suggested.

The hunting of wild bees is very common in the western states of America. In some parts they are so abundant, that many persons become regular bee-hunters. Their mode of finding the hives is curious and interesting.

I must tell you that, when a bee sets off from a flower, to return to the hive, it always flies home in a straight line. It is one of the amazing instincts of this little creature, that, wherever it may be, it has the power of

going to its home without deviation from a direct course. It may wander in the woods, it may sport amid the mazes of the flowery meadow, yet still the little creature never gets its head turned, never gets lost. The moment that its honey-bags are filled, it mounts upward on the breeze, and without hesitation, speeds like an arrow to its mark.

The bee-hunter takes advantage of this curious faculty in the bee. He sees in what direction the insect flies, and, by following



it, is able, at last, to discover the hive. A practised bee-hunter often adopts this method. He notices the direction in which a bee flies from one flower, and sets down two or three sticks to mark the route. He then goes to a little distance, and starts another bee, and marks the route he takes. If the

two lines tend towards each other, he concludes that the point at which they meet is where the hive is to be found. Judging of the distance by the skill acquired by practice, the hunter proceeds to the spot, and seldom fails of finding the honey pretty near the place which his calculations have indicated.

The scientific bee-hunter sometimes adopts the following method: he places some beebread, in order to tempt the bees, on a flat board or tile, and draws a circle around it with white paint. The bee always settles upon the edge of anything flat; so she must travel through the paint to reach the edge. When she flies away, the white paint on her body enables the hunter to observe her flight, and her course is marked down with a pocket compass. The same thing is done at another spot, some distance from the first, and, by comparing the direction of the two lines, the situation of the nest is easily found, as it must be at the point where the lines would meet.

We are told that, in Africa, there is a curious little hunter of the wild bee. This is

a small quadruped, called the honey-ratel. This cunning fellow seems to understand optics; for, when he wishes to get a distant view of the bees, he holds up one of his fore paws, as you would your hand, in order to shade his eyes, and thus exclude from the pupil of the eye an excess of light. He watches the bees, particularly at sunset, for he knows that, like other working people, they are then retiring to their homes. Following the route they take, he is able to find out the vicinity of the hive, and, when he has come near, his keen scent directs him to the honey which he seeks.

There is, also, in the wilds of Africa, a little bird called the honey-guide. This creature has the faculty of finding out where the honey is stored, and it is said that when he meets a traveller in the wilderness, he will flutter along before him, from branch to branch, and from tree to tree, and, at last, guide him to the hive.

I remember to have read a story of this kind, a great many years ago, when I was a boy. It was in the beautiful tale of Alphonso and Dalinda, told by Madame de Genlis, in

her Tales of the Castle. I have never forgotten it; and no story that I have since heard has seemed half so pleasing. Does it not seem, indeed, almost like an ancient fairy-land, that travellers, wandering in the Wilds of Africa, should find a little bird who becomes their guide to a feast of honey?

If I were to repeat all that aunt Mary told her nephew about bees, I am afraid that I should fill a book. So I may as well bring this chapter to an end, after saying a few words about other kinds of bees.



I might talk a long time about the humble-bee, or, as some of my little readers call him, the bumble-bee. He is very large, and goes about with an air of importance, like some fat, bustling people. He has one habit which

it is well not to imitate, and that is, of always humming a tune as he roams about. This bee makes his nest of moss, in the hay-field, usually beneath a heap of stones, or in some excavation of the earth. Two or three dozen usually assemble together, and carry on the various operations of the little community.

The mason bee builds her nest in the hole of an old wall, or in a rock, of little pieces of clay. She makes four or five cells, of the size of a thimble, in each of which she lays an egg. The carpenter bee makes a nest in an old post, by boring a hole, in which she lays her eggs.

We could tell some of aunt Mary's curious stories about upholstery bees and leaf-cutting bees, and we could say a great deal about their spiteful enemies, the wasps and hornets. But we must close the chapter by remarking, that all these different branches of the bee family live in communities, make and store honey, hatch their young from eggs, adopt a kind of despotic government, and carry a sharp sword sheathed in the tail.



CHAPTER XI.

ABOUT BUTTERFLIES.

OUR readers must not suppose that our little hero had no interest in anything but insects. It is true that his mind being once engaged upon this subject, his curiosity increased with his knowledge, and for a time he preferred the study of insects to that of

anything else. At one period, as I have told you, he was greatly interested in beetles; then in spiders; and then in bees. Finally he turned his attention to butterflies. You may perhaps be tired of my story, but you must hear about this.

One beautiful summer day, he saw a large butterfly seated upon a flower—its wings were splendidly marked with figures of brown, black, and gold. They were almost as large as the palm of his hand. As the insect sat upon the flower, he waved them up and down, seeming to fan the blossom upon which it was resting.

Jack's first idea was to rush upon the butterfly, and seize it; but he had now acquired a habit of investigation. He had lost that instinct which leads thoughtless children to snatch at every new and pleasing object. He was no longer a mere child, but a thinking boy. His mind was awake, and the pleasure he derived from its exercise was very great.

So Jack, having approached near to the butterfly, paused and examined it carefully. He found that it had four wings, two large

and two small ones, and that it had six legs, four only of which seemed to be used.

While Jack was thus pursuing his observations, he gradually drew nearer, until the alarmed insect took to flight, and with a wavering motion, swept across soon the adjacent meadow, until it was lost in distance.



As Jack was in the habit of thinking about what he had seen, he mused upon the little butterfly, and then asked his aunt Mary about it. She was ever ready to gratify his curiosity, and answered him as follows :

“ You must know, my dear Jack,” she said, “ that the family of butterflies is very numerous ; it comprises not only those which pass

under the name of butterfly, and which go abroad in the daylight, but those also which are called moths, and which fly about at night.

“The butterflies have ever been regarded as among the most beautiful objects in nature. They seem almost like flowers or gems, which have become endowed with life, and, taking wings, soar away upon the breeze. Thus a poet speaks of them, as creatures

‘ Which flutter round the jasmine stems,
Like winged flowers, or flying gems.’

“Who, indeed, has not observed these little creatures flying from flower to flower, sipping the nectar from each, and seeming only to think of the present happy moment? And who has not thought how like to happy, heedless, children are these pretty butterflies?

“It is natural that the poets, who are always looking out for beautiful things, should seize upon such a subject as the butterfly, and we therefore find them often alluded to in poetry. Spenser thus describes one of

these insects,—and it is a very good description too :

‘ The velvet nap which on his wings doth lie,
The silken down by which his back is dight,
His broad outstretched horns, his hairy thighs,
His glorious colours and his glistening eyes.’

“ The moths have also attracted the attention of the poet ; and as they are dazzled by a lamp at night, and frequently fly into it and scorch themselves to death, they have been often compared to giddy youth, who rush thoughtlessly into dangerous pleasures, and are thus lost for ever.

“ Butterflies and moths have not only four wings and six legs, and two horns or feelers, but they have a little tube or proboscis, with which they suck in the juice of flowers. When this is not in use, it is nicely rolled up, and packed beneath the head of the animal, under a hairy cover made for the purpose.

“ When examined with a glass, the body of the insect appears to be covered with hair, and the fine brilliant dust upon the wings is found to consist of minute scales.

“ But the eyes of butterflies are, perhaps, their most remarkable organs. Some of them

are simple, while others are composed of a collection of magnifying lenses. It is said that in some butterflies the eye consists of sixteen thousand lenses.

“Of the butterfly tribe, some live upon the honey of flowers, others upon the leaves of plants, and others upon dead wood. Some of them subsist upon animal substances, and are very destructive to woollen cloths, furs, and feathers. The honeycomb-moth we have already mentioned as often infesting the beehive, and preying upon wax.

“While the butterflies, in their perfect state, have always attracted the attention and excited the interest of mankind, the wonderful steps by which they reach their perfect state have not formed a less interesting subject of observation. They have three states of existence: they are first eggs, then worms, and then winged and perfect insects.

“The female butterfly deposits her eggs upon such plants as are proper to nourish the little caterpillars which are to proceed from them. The common white butterfly places hers upon cabbages. The tortoiseshell and peacock butterflies often place theirs upon nettles.

The eggs are generally attached by a kind of glue to the surface of the plant. The moths are usually more careful, for they generally deposit their eggs in some concealed place, and wrap them up carefully in a downy substance.

“When the butterfly egg is hatched, it produces a caterpillar, which, as you know, is a kind of heavy worm, usually furnished with sixteen feet, and which feeds voraciously upon leaves. After changing its skin, a process which lasts three or four minutes and often proves fatal, it grows very rapidly. When the caterpillar has reached its full size, it ceases to eat, and retires to some solitary place to undergo its wonderful transformation.

“Here it proceeds to form a mass of silken threads, which it spins from its mouth, and it is soon seen suspended by the tail. It now raises its head a little, giving a curve to its back. This motion is repeated until a slit is formed, first behind the head, and then along the back. At length the skin of the larva disappears, and the chrysalis is formed.

“The newly-formed chrysalis of a butterfly when opened, is found to contain only a mass

of pap-like substance, in which no trace of the limbs of the future butterfly can be observed, yet the outer covering is marked with all the external organs of the future butterfly in a very short time after the skin of the caterpillar has been cast off. On opening the chrysalis, indeed, after a proper space, we shall find, encased in separate parts, the wings, eyes, and other organs of the future butterfly.

“When the insect has remained in this pulpy or chrysalis state for a proper time, a motion may be perceived within. The skin, which is now thin and dry, gives way, and bursting into four distinct and regular pieces, liberates its little prisoner, whose wings rapidly assume their proper size, and it joins its companions in the air. The poet Spenser thus happily describes the new-born insect :

‘ When he arriving, round about doth fly
From bed to bed, from one to other border ;
And takes survey, with curious busy eye,
Of every flower and herb there set in order ;
Now this, now that, he tasteth tenderly,
Yet none of them he rudely doth disorder ;
Nor with his feet their silken leaves deface,
But pastures on the pleasures of each place.’ ”

CHAPTER XII.

ABOUT INSECTS IN GENERAL.

I WILL now give my readers a short chapter upon insects in general, extracted from aunt Mary's talk to her inquisitive nephew.

Insects are so called because they appear to be divided into two parts, and the word *insect* means *cut apart*. The insect tribe are divided by naturalists into several orders. The first consists of those that never have wings, as the spider, flea, and louse; the second consists of those which have wings, but so cased up as not to appear when first produced, such as the grasshopper, earwig, &c.; the third is of the moth and butterfly kind; the fourth such as come from a worm instead of a caterpillar, as the beetle, bee, fly, gnat, &c.

We are very apt to conceive that insects, from their small size, are very insignificant

creatures. But this is a wrong view of the subject. In the first place they are exceedingly curious in their structure, and wonderful in their habits and instincts. A writer on natural history says, that if we compare insects with the higher ranks of nature, such as quadrupeds, birds, &c., we shall perceive in the former all the peculiarities which belong to the latter; the piercing eye of the lynx and the falcon, the hard shield of the armadillo, the splendid tail of the peacock, the imposing horns of the stag, the swiftness of the antelope, the fecundity of the hare, the architectural powers of the beaver, the climbing abilities of the squirrel, the gambols of the monkey, the swimming of the frog, the burrowing of the mole, and the leaping of the kangaroo: all these gifts are found amongst insects, and generally, indeed, in a redoubled degree.

The amazing variety of the insect tribes also increases the interest of the subject. In the royal collection at Berlin, in Prussia, there are no less than twenty-eight thousand species or kinds of beetle. Celebrated naturalists have calculated that there are, in the

world, five hundred thousand different kinds of insects, and countless myriads of each kind. It is said that one single insect of the aphid or louse tribe may be the living parent of six thousand millions of descendants!

The importance of insects may be gathered from another consideration.—Some of them are very useful. The bee we have already noticed. We may also mention the cochineal insect, which exists in great numbers in the East Indies and in South America. It is a minute creature of the aphid tribe, and is hardly so large as a peppercorn. Yet it is produced in such quantities that many thousands of pounds of them are sent every year, in a dried state, to America and Europe. They contain a colouring principle, called carmine, which produces an intensely red colour. These insects are chiefly used for dying scarlet. In Brazil large estates are devoted to the cultivation of plants, for the purpose of breeding them. Great quantities are also produced in different parts of Spain.

Among the useful insects, we may notice the Spanish fly, which is about three fourths of an inch in length, with brilliant green

wings. They are called *cantharides*, and are used in medicine, especially for producing blisters.

We might notice many other useful insects, but must pass them by. We might speak, also of the beautiful fire-flies, which appear in myriads during the night; of the glow-

worms, which seem to burn with a mild and steady blaze, to illuminate the darkness; and the great lantern moth of South



America, which is sometimes used to decorate the heads of women, and several of which, it is said, will answer the purpose of a torch.

The surface of the earth, the waves of the sea, and the very atmosphere around the whole globe, are all the abodes of countless insects. Even the stalks and leaves of plants are filled with them. If you will take a microscope and look into the stalks of certain plants, you will see thousands of little busy,

bustling insects there, all of them seeming to be in the full enjoyment of existence. Nay, if you will apply the microscope to a tumbler of water, you will see that this also is filled with living things. Thus the poet says :

“ Full nature swarms with life ; one wondrous mass
Of animals * * Through subterranean cells,
Where searching sunbeams scarce can find a way,
Earth animated heaves. The flowery leaf
Wants not its soft inhabitants. Secure,
Within its winding citadel, the stone
Holds multitudes. But chief the forest boughs,
That dance unnumbered to the playful breeze,
The downy orchard, and the melting pulp
Of mellow fruit, the nameless nations feed
Of evanescent insects. Where the pool
Stands mantled o’er with green, invisible,
Amid the floating verdure, millions stray :
* * * * Nor is the stream
Of purest crystal, nor the lucid air,
Though one transparent vacancy it seems,
Void of its unseen people.”





CHAPTER XIII.

ABOUT THE WREN FAMILY AND OTHER MATTERS.

I HOPE my readers are satisfied, by this time, that Inquisitive Jack, in pursuing the study of insects was not wasting his time. It not only gave him a great deal of pleasure, but he obtained from it much useful information. But I must tell you what I have before intimated, that his whole attention was not confined to insects. He observed

and investigated plants and flowers, and thus became a botanist. He studied the habits and nature of birds, and thus became an ornithologist; and, in short, he mastered the whole field of natural history.

I will now tell you how Jack's attention was first attracted to birds. One day he was at the bottom of the garden, when he became interested in some insects which he saw on the leaves of a hop vine, which was climbing up a trellis close by. In order to examine the insects more closely, Jack took off his cap, and carelessly hung it on the top of one of the stakes which supported the trellis.

After examining the insects for a while, Jack became so interested in the subject that he picked off some leaves of the hop-vine, covered with the little creatures, and carried them to his aunt Mary, to ask her about them. He forgot his cap, which was left on the stake; nor could Jack recollect, when he wanted it, where he had left it. He was obliged to wear his best hat for nearly a week, when by chance he discovered his cap on the stake. He then recollected all about it, and ran to the trellis to take it down. But

what was his surprise to find it tenanted by a fierce little wren, who flew out of the cap and then darted at Jack, snapping at him sharply with his tiny beak.

Jack was almost frightened at the fierceness of the little bird, but after a while he reached up his hand and took down the cap. You may well believe that he was greatly amused to find that the little wren, with its



companion, had begun to build a nest in it. They had already packed it more than half full of sticks, straws, and dried grass.

At first Jack was sorry that he had robbed the little birds of their home; but after a while he got a little box and made a hole large enough for the wrens to go in and out, and set it upon the stake where the cap had been. For two or three days the wrens were very shy and would not go near the box.

But at last one of them flew to the trellis and peered all about to see that there was no danger near. In a little while he sidled along towards the box, making a queer noise all the time. By and by he ventured to alight upon the box, and finally he popped his head into the hole. Then he looked all around again very cautiously, and at last in he went. He soon came out again and stationed himself upon the top of the box, and began to sing with all his might. I will try to put his song into words.

Hi diddle ho diddle,
Pop diddle dee,—
Here's the prettiest house
You ever did see.

Come hither, come hither,
My own pretty dear,
Here's a home for us both,
And no danger near.

Here's a hole for our door,
And a room for our nest,
So come, my sweet bird,
And we both will be blest.

Hi diddle ho diddle,
Pop diddle dee,—
'T is the prettiest house
You ever did see!

Thus the little fellow kept singing on as if he would split his throat, and soon his little mate was seen flying along towards him. She alighted upon the box, and nothing could exceed his apparent delight. Mr. Wren then popped into the box, and Mrs. Wren popped in after him.



Jack was an attentive observer of all these proceedings, and he was greatly delighted to find that the wrens were willing to accept of the box in exchange for the cap. The next day they began to build their nest in the box. It was very pleasant, indeed, to see the little creatures at work. They would carry up

quite large sticks, and were very handy in getting them into the hole. They began their work by sunrise, and so industrious were they, that in four days the nest was finished. The lower part consisted of rough sticks and coarse straws. The upper part was finer, and the lining was of fine grass. In a week there were four little spotted eggs in the nest. The female wren was now rather quiet, but her mate was very watchful and bustling. If a robin or any other bird came near, he flew at him in the most fearless way. One day, as Jack was watching him, the little fellow attacked a crow that was passing by, and pecked him so sharply as to make the old fellow cry "Caw, caw, caw," and the wren seeming satisfied, returned to his box. Perching himself upon the very top of the trellis, he began to sing a song of triumph, shaking his wings all the time in great glee.

The female wren soon began to sit upon the eggs, and her consort was always at hand when any cat or bird intruded upon his dominions. He spent a good deal of his time in singing; in part, I suppose, to amuse himself, and in part to amuse his little lady.

Well, after a time, there were four young birds in the nest, and both Mr. and Mrs. Wren were too busy in feeding their children to sing or play. They caught flies, and moths, and spiders, and gave them to their young ones, and it was amazing to see what a number of these insects the little wrens ate, and it was really amusing to see how serious and silent the old wrens appeared to be.

The little ones grew apace, and in a short time it was thought best for them to leave the nest. You may well believe that Jack was on the look-out to see the little creatures take to their wings for the first time. In the first place, one of the young birds put his head through the hole in the box, and looked all round to see if the coast was clear. It was amazing to see how cunning the little fellow was, though only a fortnight old. The old wrens were at a short distance, chattering at a great rate, and seeming to invite the little fellow to try his wing. At last he took courage, leaped from the box, and alighted safely upon a fence at some distance.

Now how do you think this little bird knew how to fly—where to go—and how to alight

upon the fence?—for you must remember that he had never been out of the box before. I suppose you will tell me that he was guided by instinct—that strange power given by the Creator—and you will tell me right. After the first one had departed, the others came out one by one, and all were successful in their first flight, except the last. This little fellow, in attempting to alight upon the fence, missed his footing, and fell to the ground. The old wrens came to him immediately, and there was a prodigious chattering about what had happened. The little fellow looked very serious for a time, but at last he made a new effort, flew a little distance, and reached one of the lower rails of the fence. The old wrens cheered him with their approbation, put a spider in his mouth, and he seemed quite happy.

This was a great day among the wren family. Never was there such a bustle before! The little wrens kept calling out for something to eat; the old wrens flew first to one and then to another, giving each an insect.

It would take me a long time to tell all

that happened upon this interesting occasion. Jack was there and saw it all, and if you ever meet him you had better ask him about it. I can only tell you, at present, that from this time he was very much interested in birds; not as creatures to be hunted and tormented or killed, but as creatures that build nests, and have their homes, and rear their young ones, which they love very much, and which they treat with the utmost care and tenderness. He looked upon them as creatures displaying great ingenuity, many curious habits and wonderful instincts. He therefore found a great deal more pleasure in watching their movements and studying their characters, than in throwing stones at them or shooting them.





CHAPTER XIV.

ABOUT THE HEN AND HER CHICKENS.

SOON after this, Jack's attention was very strongly attracted by a hen and her chickens. Jack himself had set the hen. He was told that the eggs would be hatched in just three weeks, and so it proved.

It is a curious thing that the eggs of hens should always be hatched in just three weeks,

and I must stop to tell you a story about this. A man told one of his neighbours that his hens always hatched of a Sunday, and he wondered what the reason was. "I can tell you," said the neighbour, "it is because you set them on a Sunday!" Thus you see that the improper conduct of a man who broke the sabbath was exposed.

But to return to Jack. About the time the hen was to hatch, he went every day to see if the chickens had come forth. He could not help wondering at the patience of the old hen in sitting night and day so faithfully upon her eggs. He noticed that she went off her nest but once a day; that she was then in a great hurry to get a little food and drink and return to her duty, as if she were afraid her eggs would suffer. He observed that nothing could tempt her from her charge: the other hens were out in the fields, scratching the earth, feasting on worms and insects, and delighting in the spring-time; but the old hen, forsaking their pleasures, remained upon her eggs. Though she was wasted by hunger, thirst, and fever, nothing could induce her to betray her trust: there she continued,

obeying that voice within which we call instinct.

On the twenty-first day of the hen's sitting, Jack went early in the morning to the nest, and his delight knew no bounds when, on approaching it, he saw the chickens peeping out from under old Biddy's feathers. The good mother herself seemed to be filled with a sort of quiet extacy. When she heard the gentle cries of her offspring, she endeavoured to hush them to rest by a few low notes, as much as to say

“Hush, my dear,—lie still and slumber.”

All this day the hen remained on her nest, and Jack gave her a little meal mixed with water to eat. The next day twelve of the thirteen eggs were all hatched, and the old hen, with much caution and an air of vast importance, set forth with her brood for a walk. It was interesting indeed to witness the scene.

No sooner had the mother and her brood issued from the shed in which the hatching or incubation had taken place, than she began to scratch among the leaves and grass

with all her might. The chickens kept close to her side, and though but a day old seemed to know perfectly well what it all meant. They picked up the little seeds and insects, and swallowed them, taking care to avoid stones and dirt and things that are not fit for food. How could these little creatures know so much? That is a curious question; and I can only answer that God had taught them.

The old hen went on from place to place, clucking all the time, and taking the utmost care to keep her brood together, and under her own immediate inspection. She made good use of her legs among the leaves, and many a grub and worm did she discover for her little ones. She would eat nothing herself, but gave everything to her chickens; except now and then when she came across a beetle or other insect too big for her infant flock, and then she swallowed it.

Nothing could exceed the industry, energy, and watchfulness of old Bidy. For hours together she continued to scratch and dig for her young ones, as if life depended upon it. And all this time it was delightful to see how careful she was of her brood. Her head was bobbing up and down every instant, and her

sharp eye turned on every side, to see if there was danger. Not a bird flew over the spot unwatched; and if it was in any degree threatening in its appearance, the whole flock were instantly driven to a place of safety. If a cat or dog came near they were sure to repent it, and learn better manners for the future.

When at last the chickens had filled their little crops, and became weary, the old hen gathered them under her wings. There is hardly anything in nature more pleasing than a hen brooding her chickens. The little creatures themselves are marked with a singular smoothness, beauty, and look of innocence. Those which are most weary bury themselves deep in the plumage of the mother's breast, and there, cherished by a genial warmth, imbedded in down, and every want and fear appeased, they fall to sleep. Those which are not yet so drowsy, pop out their heads from the mother's feathers, and look around; or they linger outside, and pick among the gravel for food; or they nibble at the old hen's beak; or perchance they smooth some bit of their delicate plumage that is ruffled; or possibly climb to the old hen's back. The

look of innocence, peace, and happiness displayed by the chickens, and the mingled aspect of care and content borne by Mistress Biddy, afford a touching and delightful picture. Who can witness it and not feel that a God of love is the author of what we call *Nature!*

All these things were noted by Jack, and after he had observed them for a long time, he went for his aunt. He found her, as usual, at work, but he could not be contented till she left her work, and went with him to see the hen and her chickens. After looking at them a long time, they went to the house, and some days after the following conversation took place.

J. Pray tell me, aunt Mary, why the hen that has chickens always keeps *clucking*?

A. That the chickens may always know where she is. The chickens are continually running about, and sometimes they go to a considerable distance: but as the hen is always clucking, they can at any time find her. But for this, they would inevitably get lost. If the Creator had forgotten to teach hens to cluck, and had neglected to make any other adequate provision, a

brood of chickens could never have been raised.

J. Well, why do the chickens keep always chirping?

A. That the hen may know where they are. You will observe that if two or three chickens are wandering together, away from the hen, their chirping is usually faint and low; but if one is straying alone, his tones are loud and distinct. They seem to feel confidence when several are together, but if one is alone he feels that it is necessary to speak out. The clucking of the hen may be considered as continually calling to her scattered brood, "Here I am, chicks! here I am!" And the chirping of the chickens may be considered as saying "Here am I, mother! Here am I!" In this way a communication is kept up, even while the brood is scattered over a wide space in search of food. Almost all birds have natural cries, which answer the same purpose with them as the clucking of the hen and the chirping of the chickens, with these.

J. Well, aunt, I see that the old hen seems to *talk* to her chickens. If a wren or a sparrow, or any other little harmless bird, flies

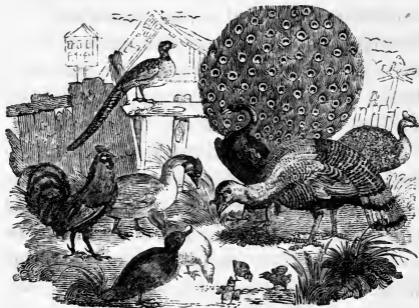
by, the old hen says “cur-r-r-r-r!” in a moderate tone, as much as to say “look out;” and so all the chicks just cast their eyes around, and seem to take no more notice of what has happened. But if a hawk appears in the air, and near, the “cur-r-r-r” is uttered in a wilder key; the old hen steps nigh, and seeks a shelter, and the chickens run to her as if frightened out of their little wits. Now what I want to ask is, how do the chickens only two or three days old know so much and understand so well what their mother means and says?

A. You might as well ask, Jack, how the chickens know so much as to pick up seeds and worms when only a day old. The seeming knowledge of these little creatures, which is often so wonderful, is to be explained just as we explain the skill of the bees in building their cells, and the ants in constructing their little cities in the earth—by instinct: a power or knowledge implanted by nature, or in other words by God, the author of nature. He gives these powers, and though we may see their effects, he only can explain their operation. But there is one thing in your observation upon the chickens to which I

wish to call your attention, Jack. Did you ever know the old hen to call to her chickens, in danger, when they neglected or disobeyed the call?

J. No, not that I remember.

A. Let this, then, be a lesson to you, my boy: these little birds are taught obedience to their parent by God, and they obey. So God has taught children obedience: for he has said in the solemn commandment, "Honour thy father and thy mother," and the apostle adds, "Children obey your parents in the Lord, for this is right." The hen, the parent of the chickens, is their guardian: she knows more than they do; she is stronger, and sees further, and is wiser than they. It is best for the chickens, therefore, that they should obey her; were they to neglect her counsel they would be devoured by prowling beasts or birds of prey. The obedience, therefore, that they are called upon to exercise is imposed for their good. And just so is it with respect to children: their parents have more experience, knowledge, and wisdom than they; they know what is best for them. It is, therefore, for the true happiness of children that they should obey their parents.



CHAPTER XV.

THE POULTRY-YARD.

I SHALL not undertake to tell the whole history of the old hen and chickens, whose story is begun in the preceding chapter. If any of my readers meet with Jack, who is now a man, they can ask him and he will inform them how the greater part of the brood grew up to be pullets or cockrels, and

made a considerable noise in the world. He will tell them how the former at last became old hens, and laid eggs, and cackled like their ancestors; and how the latter, after many funny trials, learned to crow, and finally to fight, as their fathers and grandfathers had done before them. I must tell you myself what Jack said to his aunt about this fighting.

He had watched the chickens with a good deal of care, and he was greatly diverted to see the little roosters, as soon as they had bits of red comb on their heads, try to crow and fight. They really seemed like some smart boys we have seen, at the age of sixteen or seventeen, trying to smoke cigars and drink wine, and appearing very ridiculous, while they fancied that they were exciting the envy and admiration of all around them, inasmuch as they are imitating the deeds of those older than themselves.

Jack laughed heartily at the ambitious efforts of the cockrels, as well in boasting as in battle, until one day he saw two of them fight till their heads were bloody, and one of them had his eyes picked out. This shocked him greatly, and his heart being grieved, he

went to tell what had happened to his aunt. She tried to comfort him as well as she could, but at last he spoke to her as follows: "You told me, aunt Mary, that these creatures were governed by instinct, and that this instinct was implanted by God. You said that the obedience of the chickens to their parent was of this nature, and furnished a good example to children. Now I wish to ask if this fighting of the cockerels is not implanted by God, and therefore a good example to children?"



His aunt smiled at the shrewdness of this question, and seeing it was asked in earnest and not scoffingly by Jack, she replied seriously in these words. "I do not suppose, Jack, that instinct is the only guide of animals. It is their guide when young, but when they are older and know how to take

care of themselves, then I suppose that in many things they act from their own feelings. When you were an infant you were guided by instinct; but now that you are older, you act freely according to your choice. You may fight, or you may be peaceful, just as you please. Having arrived at this period you are responsible for your conduct, for it has pleased God to make you free. It is just so, I think, even with these young cockrels, they may either fight or let it alone. If they fight and get bloody noses, they only are to blame. And if they do fight, it is no example for us. God has given human beings a love of peace, and this should be their rule. Dr. Watts has said,

“ Let dogs delight
To bark and bite,
For God hath made them so—
Let bears and lions
Growl and fight,
For 'tis their nature too.”

But it is quite otherwise with human beings: even if brute animals are left to tear each other in pieces, mankind are taught that peace, kindness, and harmony are not only

the duty but the happiness of the human race.

From observing the hen and her chickens, Jack's attention was naturally drawn to the other tenants of the poultry-yard. The strutting turkey, the hissing gabbling goose, the waddling duck, the screaming Guinea-hen, and the fantastic peacock, each in turn be-



came the subject of his investigation ; and each seemed to him to have a character and an interest peculiar to itself. If I had the power faithfully to paint all his feelings, and space to detail all his thoughts, I could make the story entertaining ; but I must content myself with a very general account of the matter.

I believe there are very few persons who

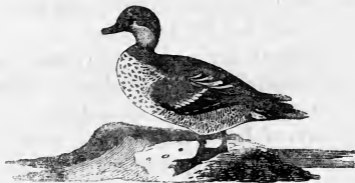
have not been often amused in pausing for a half hour, and noticing the various airs, manners, and customs of the feathered folks of the poultry-yard. The hen stealing to her nest, deposits her eggs, and then comes forth with an obstreperous cackle, to tell every body what she has been about.

“Cut, cut—cadaw cut—
Lay an egg every day,
And have to go barefoot!

The *restin*—he that is “cock of the walk”—leads forth his bevy of hens, and when he finds a good fat grub, calls his favorites to come and feast on the delicate morsel. Like an old beau, he seems to prefer the happiness of the other sex to his own: his tones and manner are soft and insinuating, and he becomes the very personification of gallantry. While he is thus tender to the females of the flock, he is harsh and unsparing to his rivals of the masculine gender. If one of these comes near, he is sure to feel his spur, and after the rebuke to hear the shrill triumphant crow of the conqueror.

The turkey-cock struts round and round,

grating the ends of his wings upon the ground, and displaying his purple wattles, his crimson comb, and his black bristly beard, to the admiring gaze of the hens of his flock. The guinea-hen, creeping afar amid some thicket, comes running home with a terrible cry, as if thieves, robbers, and murderers were at hand! The peacock, situated upon some conspicuous mound,



spreads out his tail, set with a thousand gorgeous gems, and lost in self-admiration, appears to enjoy a sublime self-conceit. Amid all this exaltation, the vulgar duck is dabbling in the mud, only deigning to utter his quack, quack, quack, at intervals few and far between. At the same time the silent sentimental goose is swimming upon the bosom of the muddy pool, perchance now and then

plunging its long neck into the recesses of the element upon which it floats, happy if perchance some insect, lizard, or tadpole may reward its search.

It is not to be supposed that these amusing scenes escaped the sharp observation of Inquisitive Jack. He indeed noticed the peculiarities of the several kinds of poultry: and had many a long conversation upon the subject with his aunt. We can only note the substance of what she told him.

The domestic fowls are all the descendants of birds originally wild. The barn-door cock and hen came originally from Asia, and in some parts of India they are still to be met with, though their appearance is somewhat different from that of the tame breeds. The peacock came also from Asia; and the guinea-hen from Africa. The duck is but a tame mallard, a bird which often is shot along our coasts. The honest goose is descended from the wild gray bird that is often seen in flocks in spring time, high in air, and in the shape of a triangle, wending their way to the far north, where they may breed in solitude, peace, and safety.

The turkey is the only original bird of America among our poultry. It was found in the forests when the Europeans first visited this continent. It is less changed by domestication than any other bird; if you were to see it in the wilds of the west, where flocks of them are still common, you would think it only a timid turkey which had strayed from the farmyard. It is a strutting, vain, cowardly bird, though it is very good eating. The French call it *dinde*, and hence our word *dandy*, which means a vain, cowardly coxcomb.





CHAPTER XVI.

ABOUT BIRDS IN GENERAL.

THE STORY OF DICK AND THE GIANT.

OUR friend Jack having made himself familiar with the peculiarities of the domestic fowls, turned his attention to other species of birds. He noticed particularly those which seem to possess bold and confiding natures, such as the sparrows, that build upon the

shrubs around the house; the martins, that take up their abode in boxes which you make for them, and place near the eaves of your dwelling; the swallows, that build in the barn; and the cheerful robin, that loves to dwell in the apple-orchard. All these he observed with care, noticing their modes of building and rearing their young; the food they ate, the cries they uttered, and in general their peculiar characteristics. From these Jack passed to other birds, and carefully studied them also. At last he was pretty well acquainted with the whole subject of birds, and now he observed several important things which I shall present to the attention of my readers.

In the first place Jack was struck with admiration at the formation of birds. They are designed to raise themselves in the air, and to spend a considerable part of their time in that subtile element: and how wonderfully adapted to this purpose are they? In the first place a bird must have great strength, and yet great lightness; and how happily are these united. Look at the quill of the wing, how strong and yet how light! Who could

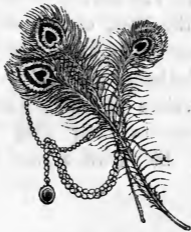
have invented anything more admirably suited to rise on the breeze and cut its way through the air? Is there a human being who could make a single quill, even if the model were placed before him? Not one.



And then look at the bones of the bird: these, instead of being solid, as in quadrupeds, are hollow. They are, therefore, a great deal lighter than in other animals, while they are equally strong. And then observe the structure of the bird's skeleton. What a wonderful and ingenious piece of machinery.

Look at the wing, how easily it opens and shuts, and thus at once lifts the bird upward and drives it forward, like an arrow, in its path. Look at the tail, destined, like the rudder of a ship, to direct its course: and how admirably it is turned this way and that, quick as thought, to guide the aerial voyager even among the intricacies of the forest!

Consider the feathery covering of the bird, designed to present a smooth surface, so as not to cause interruption in passing through the air; and to furnish a coat as impervious to the water as India rubber, yet light as the gossamer. How wonderfully are these ob-



jects attained! And now let us reflect upon the wisdom of the Creator in designing a class of animals destined to soar aloft upon the air, and his power in accomplishing his purposes, as evinced in the structure of birds. How many millions of these beautiful creatures there are in the world; how varied their forms; how diversified the structure, habits,

and instincts ! and yet let it be remembered that man, with all his art, cannot make a feather.

The music of birds is a very curious and interesting phenomenon, not only on account of the admirable variety and sweetness of the songs they produce, but for the strength of their voices. The lowing of the bull, or the roaring of the lion, cannot be heard at a greater distance than two miles, yet the little thrush can be heard half a mile. If quadrupeds had voices equal to those of birds, in proportion to their size, an elephant could easily be heard across the Atlantic ocean.



The variety in the forms of birds is a subject of great interest. How different is the

duck, with its short legs, from the crane, which seems to be walking upon stilts; the common barn door fowl, with its short neck, from the flamingo, whose neck is almost a yard in length, and not half as thick as your wrist!



How different is the ostrich, which will carry a man upon its back, from the little humming-bird, which seems scarcely larger than a humble-bee!

Who can look forth upon the landscape, and notice the feathered tribes, glancing from tree to tree, from bush to bush, delighting

the eye with their pleasing forms and lovely hues; and the ear with their charming melody; and the heart with that aspect of life and cheerfulness which they throw over the meadow, forest, and field, and not lift up his thoughts to Heaven, and say "O Lord! how manifest are thy works; in goodness and mercy hast thou made them all!"

But I must not forget to say one thing more about Jack in this chapter. While he was studying the subject of birds, he was very fond of getting young ones, so that he might rear them; he also caught several old ones, which he kept in cages. Now I believe that certain birds may be happy in cages, such as canaries, that are bred in confinement: but to catch wild birds and shut them up is very severe for the poor little creatures.

Jack's aunt thought as I do about this matter; and one day she told her nephew the following story, which I commend to the attention of all bird-fanciers.

DICK AND THE GIANT.

Poor little Dick; what a gay blithe fellow he was! He used to go singing and whistling about nearly all day; he was always merry, and scarcely anything could make him sad.

One day little Dick thought he would have a ramble in a large forest at some distance from his home. He had often been to the sides of it before, but it looked so dark he was afraid to enter.

But Dick was more merry than usual on this day, for the sun shone so brightly, and the flowers looked so lovely, that he sang and whistled until he made the woods ring again.

There was a clear brook running through the wood; and the waters looked so clean that Dicky, being very thirsty, stooped down to drink; but at that moment he was suddenly seized from behind, and found himself



in the hands of a great, tall, fierce, ugly-looking giant, a hundred times as big as himself; for Dick was not much bigger than the giant's thumb. The giant looked at him with savage delight; his mouth opened wide, and he made a noise which seemed to Dick quite terrible.

Dick thought the giant would have eaten him up alive at one mouthful; he did not, however, do this, but put him into a large bag and carried him off.

The poor little captive tried all he could to get out of the bag, but to no purpose, the giant held him fast. He screamed, he struggled, he tried to tear a passage—the giant laughed, and carried him away.

At last the giant came to his house—a gloomy looking place, with a high wall all round it, and no trees nor flowers. When he got in he shut the door, and took Dick out of the bag.

Dick now thought his time was come.

When he looked round he saw a large fire, and before it hung four victims like himself roasting for the giant's supper.

The giant, however, did not kill Dick; he took him by the body, and gave him such a squeeze as gave him great pain; he then threw him into a prison which he had prepared for him. It was quite dark, and iron bars were all round it, to prevent his getting out.

Dick beat his head against the iron bars; he dashed backwards and forwards in his dungeon, for he was almost driven mad. The giant gave him a piece of dry bread and a drop of water, and left him.

The next day the giant came and looked, and found that Dick had eaten none of his bread; so he took him by the head, and crammed some of it down his throat, and seemed quite vexed to think that he would not eat. Poor Dick was too much frightened to eat and drink.

He was left alone in the dark another day, and a sad day it was; the poor creature thought of his own home, his companions, the sun-light, the trees, and the many nice

things he used to get to eat; and then he screamed, and tried to get between the iron bars, and made his poor head and limbs sore in trying to get out.

The giant came again, and wanted Dick to sing, (the same as he sung when he was at home,) and to be happy and merry. "Sing, sing, sing," said he; but poor Dick was much too sad to sing—a prison is no place to sing songs in.

The giant now seemed quite in a rage, and took Dick out to make him sing, as he said. Dick gave a loud scream, a plunge, a struggle, and sank dead in the giant's hand.—Ah! my young reader, poor *Dick* was a *little bird*, the *giant* was a *cruel boy*, and the *prison* was a *birdcage*.



CHAPTER XVII.

ABOUT QUADRUPEDS.

I MUST tell you that Jack had now learned to read, and this was a source of great delight to him. It often happened that he could not go into the fields to study nature because the weather was stormy, or perhaps it was winter, and the ground was covered with snow. It is true that his aunt was generally ready to answer his questions, and to give him information, but she could not attend to him always; and besides he found that in books there were more exact and scientific accounts of birds, beasts, fishes, insects, and other things which interested him, than even aunt Mary could give.

Thus Jack devoted a good deal of his time to reading, though he did not lay aside his habit of observing and investigating. This habit is very important, and I advise all my

young friends to adopt and continue it, however much they may read. Reading will indeed store the mind and make it full of knowledge; but observation and investigation render that knowledge clear, distinct, and useful. So I wish to have every one follow Jack's plan, to read a great deal, but also to observe, think, and investigate a great deal. Thinking is to the mind what exercise is to the body, and makes it strong, sturdy, cheerful, and full of health. Thus my plan is that reading books and reading nature should go on together. Now I will tell you how Inquisitive Jack managed this.

One day he was going through a little wood when he saw a squirrel running along upon the fence. It was of a reddish colour, and exceedingly nimble. It seemed almost to fly along the rails of the fence, and at last it mounted upon a tree. It then ran out upon the limbs and sprang to another tree. Thus it dashed from tree to tree almost like a bird, until at last it reached a large oak; it now seemed to consider itself out of the reach of harm, and accordingly it began to chatter in the most extraordinary manner. There was

something about it which made Jack feel that the fellow was making fun of him. He was annoyed at this, and picking up a stone he hurled it at the offender with all his force.

The squirrel dodged the stone, ran up the tree a little higher, and chattered louder than



ever. It seemed to say something like this: "Jack, Jack, you are a very silly fellow, get you gone, and leave the woods to me and my companions; Chickaree! Chickaree! Chickaree! Get you gone, Jack! Chickaree!" While the squirrel was saying this, he flou-

rished his long red tail, and seemed to be in a state of great agitation.

When Jack went home he told his aunt about the squirrel; but she did not know as much about squirrels as of bees, butterflies, and birds, and therefore she could not wholly satisfy his curiosity. He therefore consulted a book of natural history, and there he found a full account of the red squirrel or chickaree. He found it described just as he had seen it, and, furthermore, he learned that it was one of the most lively of the whole squirrel family; that it lives upon nuts, is common in the forests of New England and the Middle States, that it builds its nest in hollow trees, and lays up a store of its favourite fruit against the winter season.

Now you will be able to see the advantage of combining observation with reading. Jack had seen the squirrel; he had noticed its colour, form, air, and manners. He had, therefore, distinct and indelible impressions respecting these things; so when he began to read about this squirrel it was of something he had seen; something of which he had a lively knowledge; something associated in

his mind with his walk through the woods, and the pleasure of a ramble. He read, therefore, with a keen delight; he understood what he read; he remembered it all, and he was incited to go on and pursue the subject, till at last he had read the story of the whole squirrel family—red, black, and gray.

I tell you this just to give you a specimen of Jack's way of combining observation with reading. And now I must tell you about another thing which I have alluded to before. It would seem that notions resemble boys; they do not like to be alone. One idea wants another, and several ideas want a good many others. You show a child a beautiful shell: it gives him a new idea, and that immediately suggests a desire of other ideas, and so he asks "Who made the shell?" "Where did the shell come from?" "What is it made of?" &c.

I will give you another instance of the manner in which Jack reflected on what he saw. One day he was strolling through the fields at a distance from any house when he saw a large hawk pounce down upon a rabbit. The talons of the bird pierced the

very heart of the little animal: it was almost instantly killed and borne away by the destroyer, struggling, however, in the pangs of death. As it was carried over his head, Jack noticed the four legs of the rabbit, and he began to reflect upon the fact that a hawk has two legs and a rabbit four. Having made this comparison, he proceeded to make others; and now it struck him, for the first



time, that the whole feathered race were two-legged creatures, while rabbits, squirrels, cats, dogs, pigs, foxes, lions, tigers, cows, horses, and elephants are four-legged creatures. As he was thus ruminating upon this matter, he happened to take up his book, and he there found that the animal creation are divided into groups, called orders, classes, &c. according to their formation.

He learned that four-legged animals, called *quadrupeds*, form one great class; that birds form another class; fishes another; reptiles another; and insects still another. And in pursuing this subject, he found that each class was divided into many families or kinds; among the quadrupeds he found the family of the cats, including old puss in the corner, as well as the lynx, cougar, leopard, tiger, and lion. He learned that among the bears there are many kinds, and also among the wolves and foxes.

And now a new source of interest grew up in Jack's mind: this classifying of animals became intensely interesting. He loved to compare one kind with another; to note the resemblances and differences; to observe the influence of climate, and see how nature had diversified her works so as to adapt everything to the purposes it was designed to accomplish. Thus at every step his knowledge increased, and became more permanently fixed in his mind; while the interest he took in study was enhanced even in a greater degree.

CHAPTER XVIII.

GEOLOGY.

JACK was one day passing by a place where some men were digging to make a road through a steep hill. He stopped to watch them for a while without any particular object in view; but his attention was soon fixed by his observing that amongst the earth thrown down there were great numbers of shells, most of them broken, and here and there a tooth and a piece of bone. He immediately set to work to find the most perfect shells he could, and the best teeth, to show to his aunt, and soon filled his pockets.

As he went towards home, and thought on the subject, it appeared to him more and more strange that these shells should exist in a place far removed from the sea, or any

lake or river, and in the midst of a large hill. He could not in any way imagine how they got there, and he hastened home, impatient to ask his aunt for a solution of the difficulty.

His aunt told him that the facts which he had observed were indeed very wonderful, though not singular, and that what she had to say on the subject would not make him wonder less, though it might increase his knowledge. She told him that there are very few spots on the surface of the earth which do not bear decided marks of having been once covered by the sea, and that there is good reason to believe that the whole was once under water. To no other circumstance can be ascribed the existence of shells on the highest hills, as well as in the valleys, and far beneath the surface.

“But what are these teeth?” said Jack. “They are shark’s teeth,” replied his aunt; “in some parts they are found in much greater abundance than where you discovered them.”

“But how is it that I could discover none of the bones of the fish?” inquired Jack.

“Because,” said his aunt, “the teeth of animals are covered with a very hard and durable enamel, which often preserves them long after the bones have decayed; and besides this, the bones of sharks are very soft, being rather gristle than bone.”



“Amongst these shells,” said Jack, “I think there are some such as I have never seen before.”

“Very likely,” rejoined his aunt; “for one of the most interesting points in the history of the animals of which we find the teeth, bones, and shells in the strata of the earth is that many of them are different from any which now exist on the surface of the globe. I will show you some pictures of some of the most remarkable of these creatures, and their skeletons.”

“But how,” said Jack, “can any one make out the form of an animal merely from its bones, so as to draw a picture of it; and the odd-looking creature you have shown me has a fleshy-looking trunk like an elephant, which of course must have perished?”



“Yes,” said his aunt, “it has perished: and nothing is known of the creature but what has been gathered from its bones. But I will tell you how this has been done, and you will then see that we have something like certain ground to go upon. Anatomists compare the teeth of one animal with the teeth of another, and the bones of one with the bones of another. From this they find that

certain kinds of teeth and a certain form of bones are always connected with certain particulars in the outward form. Thus a very strong short neck, with the bones of a peculiar form are found in the elephant, and are plainly required to support his large head with the heavy trunk attached. A similar neck in the animal I showed you has led anatomists to conclude that he also had a trunk, and the conjecture is confirmed by the form of the skull, the tusks of which you will see grow downwards instead of upwards like those of the elephant.



This skull may be seen in the British Museum: the animal is called the Dinotherium,

and must have been larger than any land animal now living, the body being eighteen feet in length.



“This is the skeleton of the Megatherium, an animal of the sloth kind, but larger than an ox, and, as it is supposed, covered with a hard covering, something like that of the armadillo. You will observe his peculiar feet, which are the most striking point in which he resembles the sloth.”

“But what is this odd-looking bird?” said Jack.



“It is the Dodo, a bird of the duck tribe, which was found by some early Dutch navigators in the island of Mauritius, nearly four hundred years ago. Several stuffed specimens of it were brought to Europe, but of these only a few fragments now remain, and the race of the bird itself has become quite extinct in Mauritius.



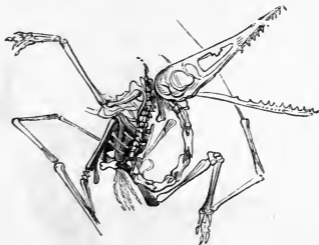
Here is a picture of a head and foot preserved in the Museum at Oxford.”

“This represents the skeleton of a very large kind of deer or elk, called the Gigantic Elk, and well it deserved the name, for it was



considerably larger than the largest horse, and, as you perceive, had very broad spreading horns. Its remains are found abundantly in Ireland.

“This is the picture of the bones of a large sort of bat, more than a foot in length, with



a long neck like a swan, and a large long head something resembling that of a crocodile.



“This sketch shows the position of the bones when the creature was flying, and

from it you may judge something of its remarkable appearance when alive.

“The next is the skeleton of a crocodile, is it not?” asked Jack.

“No,” said his aunt, “it bears very little resemblance to a crocodile, except in its general form. It is called the *Ichthyosaurus*, or *fish-lizard*.”

“It presents a very curious combination of structure: there is the back bone of a fish, and the fins of a seal or whale, the eye of an eagle, and the mouth and tail of a lizard.”

“But how can you know anything regarding its eye,” said Inquisitive Jack.

“The socket of the eye was fitted with certain small bones, still preserved in the skeleton, as you may see in the picture, which were drawn together, or relaxed by means of muscles, so as to render the eye more or less convex, to enable the animal to see things with equal



clearness whether they were near or far off. You can see an illustration of the power which this arrangement must have given him, if you compare the different focus of a very convex magnifying glass with one that is less so."



The Plesiosaurus, or *animal like a lizard*, was something like the Ichthyosaurus, but it had a more slender body and a very long neck, with a small head. The neck contains many more bones than that of any creature living, and is therefore different from the neck of the swan, or of the curious bat-like creature that I showed you the picture of. There are several varieties of plesiosaurus: opposite is the picture of one less slender in its form than the other, and with the bones in the position in which they were originally found."

Jack looked at the pictures for a long time, and was so much interested with what he

saw that he immediately determined on studying geology. It seemed to him as if a new world had been opened to his investigation ;



and to this world underground he soon began to apply his old habits of observing and thinking, and seldom passed a gravel-pit or a cliff without finding something that added to his stock of knowledge.



CHAPTER XIX.

ABOUT POETRY AND OTHER THINGS.

I HAVE now told you how Jack became a naturalist, so far as to understand animals. I might proceed and tell you how he learned a great deal about plants and flowers, and thus became a botanist. But I suspect my readers have heard enough on this part of his history. I will now tell a little about the manner in which Jack became acquainted with some other things.

One winter's day, as he and his aunt were sitting by a pleasant fire, Jack had been

reading in a book of poetry. After a while, he laid down the book, and asked his aunt why some things are told in poetry and some in prose. To this the good lady replied as follows:

“I must tell you in the first place, my boy, that prose is the language of common speech, such as I am now talking to you. But there



are certain thoughts and feelings that are too fine and beautiful for prose. If these were expressed in a common way their beauty would be lost. I will try to make you understand this by a story.

“There were once some flowers growing in a garden, but they were mixed with other plants, such as peas, beans, potatoes, beets, and other things. These had, therefore, a

common appearance, and no one noticed their beauty. At length the gardener took up these flowers, and set them out in a nice bed of earth which he had prepared for them. This situation permitted their bright colours and fair forms to be seen, and they therefore attracted the attention of every person who passed by.

“Everybody admired them, and those who overlooked them as common things when planted in a kitchen garden were ready to acknowledge their beauty and praise their fragrance, when they were flourishing in a flower garden. Thus, you perceive, that I compare fine thoughts to flowers; however beautiful they may be, they would strike us less and please us less if they were presented in a common way. They want a situation appropriate to them, and then we shall perceive and feel their full beauty.

“Poetry, then, consists of beautiful thoughts in beautiful language, and may be compared to a bed of flowers, with graceful forms, bright colours, and sweet fragrance. Prose consists of common thoughts expressed in common language, and may be compared to

a garden filled with things that are useful rather than beautiful, such as beets, potatoes, and cabbages.”

Jack listened with great attention to what his aunt had been saying, and then he rubbed his head as if he were puzzled, and did not exactly understand her. He then spoke as follows.

“Well, aunt, all this is very strange that you have been telling me. I thought poetry was only a string of verses, with rhymes at the end of them, such as *hop top, butter mutter, eater Peter*, &c. I have made some verses myself, and I thought these were poetry, and pretty good poetry too.”

“Well,” said his aunt, “let me hear your verses, and I will then tell you whether they are poetry or not.” “I will repeat them all,” said Jack, “if you will promise not to laugh.” “Go on,” said his aunt, “I shall not laugh if I can help it.” Jack then proceeded as follows :

“The dog sat down to eat his bone,
The cat went out to walk alone,
The bird was singing on the bough,
The bell was tinkling on the cow.”

The leaves were all upon the trees,
The grass was on the ground,
The butterfly was on the breeze,—
A pint doth weigh a pound.

A ghost was walking in a lane,
'T was night, and all was still,
A fly was on the window-pane,
The pigs did want their swill!"

When he got to this point, his aunt Mary laughed outright, and Jack declared that she had broken her promise, and he would not repeat another verse. He sat for some time with a pouting and offended air. At length his aunt went on to speak in the following manner: "I hope you will excuse me, dear Jack, for laughing, but I could not well help it. Your idea of poetry is like that of other children, and I think your first attempt is quite as successful as that of most persons. But I will tell you a little more about poetry, and then you will, perhaps, understand the subject better.

"Almost all nations, let them be ever so ignorant, have some poets amongst them. The first poetry they make is in praise of what they see,—the sun, and moon, and stars; the trees, and flowers, and the rivers.

“Then they begin to compare things together that are beautiful; they say that the cheeks of a blooming young girl are like the rose, and that her eyes are as blue as the sky. They compare man to a tall, well-formed tree, and they go on finding out a likeness in a great many things that at first we hardly think of as resembling each other. When they see a person in a passion, they say he is like the ocean in a storm. The more power they have of discovering these resemblances, the better poets they are. Children very often think, when they make rhymes, such as *hat bat, hop top, &c.*, that they are making poetry, but they are making nothing but rhymes.

“It is very pleasant to have rhymes at the end of every line of poetry; but the poetry does not consist in rhymes. I will repeat to you some Hindoo poetry, that was translated from the Hindoo language; perhaps it was in rhyme before it was translated.

“‘As a tree is the lord of the forest, even so is man; his hairs are as leaves, his skin is like the outer bark.

“‘Through the skin flows blood; through the rind of the tree flows sap: when a man is wounded blood gushes forth, as the sap from a tree that is cut.

“ ‘ His muscles are like interwoven fibres ; the membrane round his bones is the inward bark ; his bones are as the hard pieces of wood within ; their marrow is composed of pith.

“ ‘ Since the tree when it is cut down springs again still fresher from the root, from what root springs man, when he is cut down by the hand of death ?

“ ‘ He springs no more upon earth, but he lives with God in heaven, who is perfect wisdom, perfect happiness.’ ”

When his aunt Mary had recited these verses of poetry without rhymes, Jack asked her why rhymes were ever used. To this she answered in the following words. “ Rhymes, my dear Jack, are like music, which, you know, is pleasant to the ear. Do you not remember a song, a prayer, or story, that is in rhyme, better than one that is not ? Why is this ? Because it strikes the ear pleasantly, and touches the heart as if it were the voice of some sweet friend. I have often compared poetry, in my own mind, to one whom we love ; one whose voice is dearer than any other ; one who speaks to us in sweet and musical words, that cling to the memory, and linger with us through life.”

“ Well, aunt,” said Jack, his face brightening up, “ I think I understand it now. Whenever I think of poetry, I shall think of

you. You shall be my muse; and I know that I shall never want for bright thoughts, and pleasant sentiments, if I have such a source of inspiration. But, dear aunt, as you have recited some poetry without rhymes, will you not recite some with rhymes?" "I will, with great pleasure," said she, and accordingly she repeated the following verses:



“One morn in May, a maiden did say
To a bird on a tree, ‘Come go with me!
Come little bird, come quick to my home,
I will give you to eat everything sweet.
Sugar and cake I will save for your sake;
Melon and plum, you shall have some;
A peach and a pear, and everything rare;
Some straw for your nest, and what you like best.’”

Thus the little girl said, as she heaved a deep sigh,
 But the bird shook his head, and thus made reply :
 ‘ I thank you, my dear, but I would rather live here,
 The skies they are fair, and I love the fresh air ;
 The trees they are green, and I sit like a queen,
 On a branch as it goes while the pleasant wind blows.
 I have more on my table to eat than I am able,
 For the very large field my dinner does yield.
 But come from your book, with a good-humoured look,
 When with care you have read, and your lesson is said ;
 Sit under the tree, with your sewing, by me,
 And this afternoon I will sing you a tune.’ ”

Having repeated these lines, the lady told Jack that she would repeat some beautiful poetry in blank verse, which is poetry without rhyme, but with the words arranged in a certain musical order, and in lines containing ten syllables each.

THE ARK AND DOVE.

IN THE FOLLOWING LINES, A MOTHER IS TELLING HOW SHE TOLD THE STORY OF THE ARK AND DOVE TO HER LITTLE GIRL.

“ ‘ Tell me a story, please,’ my little girl
 Lisped from her cradle. So I bent me down
 And told her how it rained, and rained, and rained,
 Till all the flowers were covered, and the trees
 Hid their tall heads, and, where the houses stood,
 And people dwelt, a fearful deluge rolled ;

Because the world was wicked, and refused
To heed the words of God. But one good man,
Who long had warned the wicked to repent
Obey and live, taught by the voice of heaven,
Had built an ark; and thither, with his wife
And children, turned for safety. Two and two,
Of beasts, and birds, and creeping things, he took,
With food for all; and when the tempest roared,
And the great fountains of the sky poured out
A ceaseless flood, till all beside were drowned,
They in their quiet vessel dwelt secure.
And so the mighty waters bare them up,
And o'er the bosom of the deep they sailed
For many days. But then a gentle dove
Scaped from the casement of the ark, and spread
Her lovely pinion o'er that boundless wave.
Nor face of man, nor living thing, she saw;
For all the people of the earth were drowned,
Because of disobedience. Nought she spied
Save wide dark waters, and a frowning sky,
Nor found her weary foot a place of rest.
So, with a leaf of olive in her mouth,
Sole fruit of her dear voyage, which perchance
Upon some wrecking billow floated by,
With drooping wing, the peaceful ark she sought.
The righteous man that wandering dove received,
And to her mate restored, who, with sad moans,
Had wondered at her absence.—Then I looked
Upon the child, to see if her young thoughts
Wearied with following mine. But her blue eye
Was a glad listener, and the eager breath
Of pleased attention curled her parted lip.
And so I told her how the waters dried,

And the green branches waved, and the sweet buds
Came up in loveliness, and that meek dove
Went forth to build her nest, while thousand birds
Awoke their songs of praise, and the tired ark,
Upon the breezy breast of Ararat
Reposed, and Noah, with glad spirit, reared
An altar to his God.

“ Since, many a time,
When to her rest, ere evening’s earliest star,
That little one is laid,—with earnest tone,
And pure cheek prest to mine, she fondly asks,
‘ The Ark and Dove.’ ”

Such is the story of the Ark and Dove.
You will find it beautifully told in the Bible,
in the eighth chapter of Genesis. I wish you
would read it there, and then look at this
beautiful poetry again.



CHAPTER XX.

ABOUT TRUE STORIES AND FICTITIOUS
STORIES, FABLES, FAIRIES, &c.

WHEN his aunt had repeated the verses in the preceding chapter, Jack remarked that they were very pretty, and that he liked them much. "But," said he, "how is it, aunt, that the little girl, in the lines about the girl and bird, spoke to the bird, and the bird answered her? I did not know that a bird could understand poetry, or could compose verses."

"I am very glad to hear you make this remark," said aunt Mary, "for it shows that you reflect upon what I tell you. The little story about the girl and the bird is not a fact, but it is what we call a fictitious story."

"But is it right," said Jack, "to tell stories that are not true? I thought it was wicked to tell falsehoods."

“It is wicked, my dear nephew, to tell falsehoods, but do you know what a falsehood is?” “I suppose it is something that is not true,” said Jack.

“Not exactly so,” replied his aunt; “any attempt at deception is a lie. If you try to make a person believe what is not true, either by look, word, or deed, you attempt to deceive him, and are thus guilty of falsehood. Now this is very wicked; but when I tell you a fictitious story, my design is only to amuse and instruct you, not to deceive you, by making you really believe that what I tell you has actually taken place. Do you now understand why a fictitious story is not a falsehood?”

“Yes,” said Jack, “because it is not intended to deceive. But, aunt, I want to ask you a question. The other day I was looking for my pet lamb, which had got out of the field and gone away. I was looking for it along the public road, when I met Bill Hider. I asked him if he had seen my lamb, and he said yes. I asked him which way it had gone, and he pointed along the road to the east. Now I afterwards found out that the

lamb had gone the other way, and Bill Hider knew it. He pointed the wrong way just to deceive me, and give me trouble. Was not that a lie?" "Yes," said aunt Mary, "just as much a lie as if he had spoken it with his lips."



"Well, I thought so," said Jack, "and I told Bill Hider so afterwards, and he said it was not a lie, because he only pointed his finger. And now, aunt, I want to ask you another question. Do not you remember that you gave me a large apple the day before yesterday?"

"Yes."

"Well, I put it under my desk, at school, and left it there, while I came home to dinner. When I got back, it was gone. I asked Bill

Hider if he knew what had become of it. He did not say anything, but he just opened his mouth, and put his finger down his throat, and then pointed to Seth Simple, as much as to say that Seth had eaten it. I afterwards found out that Bill Hider had eaten it himself. Now was not it a falsehood in him to try to deceive me in this way?"

"Certainly it was, and a very wicked one, because his object was to conceal his own theft, and make his innocent companion appear to be guilty of the crime. Let this little incident, my dear Jack, teach you an important lesson. Falsehood is usually a mere artifice to conceal some other crime. It is, therefore, a dangerous vice, and one who practises it is sure to be despised."

The next day, after the conversation I have just related, as soon as Jack met his aunt in the breakfast room, and bade her good morning, he said to her, that he had been thinking a great deal about what she had told him the night before. "But," said he, "I have one more question to ask you; pray, what is a fable?"

"A fable," said his aunt, "is a little story, in which dogs, cats, foxes, horses, trees,

plants, and flowers, are imagined to think and speak like human beings. The object of a fable is to impress some useful lesson upon the mind."



“Well, aunt,” said Jack, “I am much obliged to you for your answer. You call me Inquisitive Jack, because I ask so many questions; but I think it is the best way in the world. Some boys are ashamed to ask questions, for they say it makes them appear

ignorant, but I had rather appear ignorant than be ignorant. Do you know, aunt, that I have puzzled myself a hundred times with the question, whether animals that we read of in fables really do think and act as they are said to do. Now, I might have saved myself all this trouble, and confusion of mind, had I sooner asked you the real meaning of a fable."

"You are quite right, my boy," said his aunt; "young people ought not to be ashamed to ask reasonable questions, and older people should always be willing to answer them."

"That is very true, aunt," said Jack, "and I hope you will be as good as your word, and answer all my questions; and as you are so good to me, I should like to do all I can to repay you. Should not you like me to tell you a fable, aunt?"

To this inquiry the lady nodded assent, and Jack then repeated the following fable of a fish-pond, the object of which is to persuade everybody that it is much better to live in peace than in strife.

FABLE.

“There was once a beautiful little fish-pond, surrounded by hills. The water was so bright and clear, that you could see the white pebbles at a great depth, as they lie at the bottom. Along the border there were trees of various kinds; they hung over the



water, and cast their shadows upon its surface. There were also beautiful flowers around the pond; some of them standing in the edge of the water, and some of them standing upon the banks, but stooping over, as if to take a peep into the water, and see their bright forms reflected there, as in a mirror.

“Well, in this beautiful pond lived a great

many fishes. There were little, short fishes, partly of a brown and partly of a golden colour, called bream; and there were perch, also of a golden colour, marked with black streaks, and of a long, slender form. And there were shiners, that glistened like pieces of money, and there were bull-heads, with sharp horns, and pike, and many other kinds. Now these fishes lived in a very beautiful place, and, as they had plenty to eat, they were perfectly happy.

“When the weather was cold, they went to the middle of the pond, where the sun shone and made the water warm; and when it was too hot, they cooled themselves in the shadows of the trees and rocks. A great part of the time they spent in playing; sometimes they would chase each other about, seeming to glide along as easily as the birds glide through the air. Sometimes you might see them in the clear water, sporting about among the sedges and rushes that grew in the margin of the pond; and then again you might see them jumping up to catch the bubbles or insects that floated on the top of the water.

“Now this was a pleasant life, and nothing

could be happier than these little fishes. But at length they began to quarrel with each other. The bream insisted that one part of the pond belonged to them, while the perch declared that it did not belong to the bream, but to themselves. While the perch and the bream were thus at strife, the bull-heads and the pike also could not agree. Their difficulty arose from a pretence on the part of the bull-heads that they were much handsomer than the pike. This was considered very insulting, and was bitterly resented by all the pike family, old and young, boys and girls, men and women.

“Dissention thus begun; it grew worse and worse, until all the inhabitants of the pond were soon involved in the quarrel, one way or another. Even those who had nothing to do with it at first, soon became parties, and at length the eels, and frogs, and tadpoles got to fighting about it. In this way, the happy little people of the pond became very miserable. Instead of gliding about in peace or in play, they now met only to struggle and fight, and very often it happened that some of them were killed in the fray.

“Now I should have told you that this pond belonged to a rich man, who, so long as the fishes lived together in peace, allowed it to remain; but, now that they were perpetually quarrelling, he determined to destroy it. So one day he had a drain cut in such a manner as to let off the water of the pond. In this way it was entirely drained, and all the little fishes perished. Bream, bull-heads, perch, pike, eels, frogs, and tadpoles, all were left upon the ground, and died by the heat of the sun. Such was the fate of these fishes. As long as they lived in peace, they were happy, but, when strife came among them, their happiness ceased; and finally, as their quarrelling continued, they were entirely destroyed.”

When Jack had finished the fable, his aunt spoke as follows: “This is a very good fable, Jack, and I think it shows the folly of quarrelling very well. I think you can now see that, although a fable is a fictitious story, its object is to inculcate truth, and not to deceive. When you read a fable or a fictitious story, you should always try to find out the truth that is intended to be conveyed.”

FAIRIES.

In the evening, when Jack and his aunt were seated by the fire, the boy began, as usual, by asking a question.

“You have told me, aunt, about fables and fancy tales, said he, now I want to know something about fairies and fairy tales; are there really such creatures as fairies?”

“No, Jack,” said the lady, “fairies are mere beings of imagination. People used to believe in their actual existence: they were thought to be lively little people



who had the power of passing from place to place, with the quickness of thought. Some of them were imagined to be good, spending their time in watching over kind and virtuous people; others were fancied to be evil spirits, busily engaged in working out mischief against mankind.

“Ignorant people used not only to believe in the existence of fairies, but they fancied that they often saw them dancing by the moonlight, in some grassy valley, or tripping, light as air, over the rippling surface of the moonlit lake. There have been a great many tales told about fairies, most of which serve to amuse the fancy, but they are seldom as useful as those homely fables which convey some moral truth to the heart. I will, however, tell you a fairy story from which you may draw some instruction.

“In a pleasant valley, between two hills, there once lived a beautiful fairy, by the name of Echo. The place was very pleasant, for a bright river swept through the valley, beneath trees with long branches overshadowing its waters.

“There were many flowers scattered along

its banks, some with graceful forms, and others with brilliant colours. The air was filled with sweet perfumes, and the voice of musical birds was heard on every side. It was no wonder that in a place so pleasant the pretty fairy should have chosen her abode, and that she was ever found at home.

“But one of her peculiarities was this, that whenever a person spoke in a loud voice in the valley, the sound was caught up by the fairy, and repeated to the rocks and hills around.

“Now it happened that there was a little boy who lived near this valley, who was very passionate. One day, he went to this place where Echo lived, with one of his companions, and for a long time was busily engaged in picking flowers along the margin of the little stream. He was so intent upon this, that he wandered away from his playmate, and at length got lost amid the trees and shrubs. He now became alarmed, and, not being able to see his companion in any direction, he called for him in a very angry tone of voice. The fairy immediately imitated the sound, and repeated it to the woods, hills, and waters

of the valley. The little boy thought at first that this was his companion, mocking him, and it made him very angry. He then called out louder than before, and used some very harsh expressions, finishing with the word 'rascal.' These were all faithfully repeated by the fairy, and particularly the last word, which was uttered again and again, until even the most distant rocks and woods seemed to repeat it.

"This startled the boy very much, for it appeared all at once that everything around, even the woods and hills, were calling him a rascal.

"'I think you are very rude,' said he, spitefully. 'You are very rude!' said the fairy, in return. 'Do not insult me,' said the boy. 'Do not insult me!' said the fairy. By this time, the boy was out of all patience, and he began to cry. At that moment, a pretty little lady came out from a bunch of bushes, close by, and spoke to the boy as follows :

"'Listen to me, lad ; you have got lost in these woods, and, instead of blaming yourself, you get angry at your innocent com-

panion. You are very silly, but I will be your friend.

““ You have been brought here by my direction, that I might teach you a useful lesson. You are accustomed to use angry words, and I wish to show you that these beget anger in others. If you call your playmate a rascal, he will call you a rascal in return. Speak gently and kindly, my boy, to



your friends, and you will then beget love in the hearts of all ; but if you are fierce, loud, and passionate, remember that there is an echo in the hearts of those around you, that will return back to your ears the saucy words you have uttered, as truly as the Echo of the

valley will repeat the loud words spoken in her ear.'

"Saying this, the little fairy took hold of the boy's hand, led him out of the wood, and, pointing towards his home, vanished into air."

Now, although this is a fictitious story, and though there is no such little woman as this imaginary fairy in the woods, still there is such a thing as an echo.

This, however, is a mere sound, caused by a shaking or vibration of the air; but it often seems to repeat your words, two or three times over, particularly if you speak loud. Such echos are very common among the hills and valleys.



CHAPTER XXI.

ABOUT DWARFS, GIANTS, ETC.

WHEN his aunt had finished this story of Echo—the fairy of the valley, Jack said he was very much pleased with it, and he thought it a very useful story. “It will always make me remember,” said he, “not to call hard names; for, if I should do so, I should expect that Echo would get into the mouth of the one I spoke to, and send me back words as rough as my own.

“Really, aunt,” continued the boy, “I am delighted with the idea of fairies, skipping about by moonlight, and dancing upon the green grass. What a happy life they would lead, gliding like humming-birds, from place to place, and always choosing their abodes in fragrant valleys, and along the flowery banks of sparkling rivers! I am sorry that these fairy tales are not true. But, aunt, I have heard of giants, and dwarfs, and genii, and

other beings that are imagined to have great power; are none of the tales about these beings true?"

"Most of these tales are mere fictions, and have no other object than to please the imagination, or, like fables, to impart moral instruction. But we read of giants in the Bible, and in the early ages of mankind there seem to have been races of men who were twice as large as those of the present day. You remember the story of Goliath and David, in the 17th chapter of the first book of Samuel." "I remember it very well," said Jack, "and it is a very pleasant story. You have told it to me, aunt, several times; but I wish you would repeat it again, for I am never tired of hearing Bible stories."

"Very well," said his aunt, "I will tell it to you, and with the more pleasure, because you seem interested in the Bible. It is indeed the best of all books; it is not only full of interesting stories, but every page is calculated to make us wiser and better. There is no surer way to be happy than to study the Bible, and obey its commands. I will now tell you of David and Goliath.

“About three thousand years ago, the nation, called the children of Israel, were governed by a king, called Saul. Near them lived a nation of Philistines, who were a war-like people, and took every occasion to do mischief to the Israelites.

“Well, once upon a time, these two nations, being engaged in war, had drawn out their armies for battle. The Philistines covered one side of a mountain, and the Israelites another, with a valley between them. There were a great many thousand men on each side, and these were armed with spears, and shields and battle-axes.

“The two armies were so near, that they could see each others’ tents covering the slopes of the hills. Thus the armies were pitched against each other, preparing for the hour of battle. But one day a strange sight appeared. An enormous giant came forth from the Philistine camp, armed with a coat of mail, a cap of brass, and a mighty spear. Before him went a man, bearing a shield. The name of this giant was Goliath.

“When the Israelites saw him they were amazed, and stood back in fear. Goliath

then lifted up his voice, and called upon the Israelites to send their strongest man to fight with him. But no one of the Israelites dared to fight with the giant.

“The next day Goliath again made his appearance in the valley, and again challenged the Israelites as before. This was done morning and evening for forty days, and Saul could find no one among all his soldiers who would venture to do battle with Goliath.

“But at length an event happened which attracted the attention of both armies. Goliath had appeared, as usual, in the valley, and uttered his haughty challenge. He was talking very loud, when a young Israelite, by the name of David, was seen at no great distance. He was without helmet, or shield, or spear, and, as compared with the giant, was a mere stripling.

“He, however, lifted up his voice, and answered to the challenge of Goliath. ‘I come not,’ said he; ‘in my own strength, but I come in the name of that God whom we, the people of Israel, worship, and he will deliver thee this day into my hands.’

“To this Goliath replied with a sneer, and

set out to meet David. The latter showed no sign of fear, but bravely advanced to meet his awful enemy. As he went along, he took a smooth round stone from a shepherd's bag at his side, and placed it in a sling which he held in his hand.

“Fixing his eye steadily upon the giant, he whirled the sling around his head, and sent the whizzing stone through the air. It struck the giant in the forehead, and he fell dead to the earth.

“Thus a boy, without spear or shield, conquered the chief warrior of the Philistine army; and thus we perceive that he who places his confidence in God, and looks to heaven for support and counsel in the day of trial, is likely to overcome a wicked foe, however powerful he may be.”



CONCLUSION.

I HAVE now told you enough respecting Inquisitive Jack for you to know the means by which he improved his mind, and obtained a large stock of knowledge. Soon after the period of his life which I have described to you, he went to school, where he attended closely to the instructions he received, and continued his habits of inquiring and thinking until he became distinguished above all his companions. When he left school, he had to get his living by trade, and the greater part of his time was occupied. But as he persevered in observing and thinking, and in reading whenever he had suitable leisure, he at last became a wise and learned man.

I have been anxious to set the example of Inquisitive Jack before you, because he pursued knowledge successfully with very little assistance from others. You have heard the old proverb "One man may lead a horse to water, but ten cannot make him drink." Now it is the same with boys in drinking knowledge, as with horses in drinking water.

A boy may have the best books and the best teachers in the world, but unless he is willing to learn, and ready to exert the faculties he has, they will all do him no good. If we again compare Jack's case with that of the horse, his merit consisted not only in his drinking the knowledge that was offered to him, but in his finding out where to drink. He went to the water without being led, and drank with a good heart.

It is no doubt a great advantage to have good teachers, and a great disadvantage to have none at all. It may not be in the power of every one to become learned, but every one may learn a great deal if he will make the most of the means within his reach. There are not many amongst my little readers who cannot command as many advantages as Jack possessed. There are not many who have not some kind friend or relation who would be ready, like Jack's aunt, to answer their questions, and encourage them in their progress; and there are none to whom the woods and the fields, the waters and the earth, the clouds and the starry sky are not open; who have not hands and eyes, and the other senses,

with powers of thinking, too, if they would but exercise them. These, with the reading of a few books (which almost every one in this country may either obtain for himself or borrow) were the helps which Jack used, which tended to make him useful and respected amongst his friends, and furnished him with a never-ending source of pure enjoyment.

I shall now give you a few cautions respecting the reading of books; the cautions which Jack, as he grew older, attentively observed. You should not try to read *many* books. It is an excellent thing to have read a few books well; but it is a bad thing to have read a great many hastily. It may be no disgrace to a person not to have read a book, but it is a certain disgrace to have read a book and to have learned nothing from it. A great many people are proud to boast that they have read many books: but this is a sad delusion. The important question is not—What books have you read? but—What do you know, and what use can you make of your knowledge?

The possession of one particular branch of knowledge need not hinder your learning

another. I mean, for example, that if a man knows Botany, it is no reason why he should not study Chemistry. He cannot learn too much: knowledge is light carriage; and the more a man has learned, if he has learned properly, the easier learning will be to him. But in respect to this there is a caution required. You should learn one thing well, that is, get a good clear notion of it, before you learn another. Jack never overlooked this caution when he was old enough to see its importance. He learned *one* thing at a time, and therefore he learned a great many things one after another, and he learned them all well. While he was studying a subject, his whole attention was fixed on it till he had become master of it; and thus it was that though he was acquainted with a variety of subjects, he was not a mere smatterer in anything.

By a smatterer, I do not mean merely one who knows a little of a subject: we must all of us know a little before we can know a great deal of any subject. A child who knows his alphabet only, knows but little, but he is not a smatterer if he knows it well. Jack, when he had attentively observed the ant-hill and the beetles, knew but little of entomology,

but he was not a smatterer. I will tell you what a smatterer is. He is one who does not know any one part of a subject thoroughly but who seems to know something by having learned a few names and forms which he uses in conversation, without being acquainted with their proper meaning.

The poet Pope has said,

“A little learning is a dangerous thing,
Drink deep, or taste not the Pierian spring.”

Pope was famous for saying things well, but I do not think he has said this well. If we have any learning we must have possessed “a little learning” at some time or other. We cannot learn anything in a lump, but we must proceed by degrees. Besides, “a little learning” must in itself be better than none at all. The fact is “a little learning” is only dangerous when its possessor mistakes it for a great deal, and thereby becomes conceited; or when by using fine words and learned names he wishes to pass for a great man, and thus becomes a smatterer. Perhaps it was one of these evils which the poet meant to denounce; but he should have said what he meant in a way less likely to be misunderstood.

I have now, in conclusion, only one short piece of advice to give you. If you wish to be learned and wise, apply your whole mind to one thing at a time; never try to *appear* to know more than you really do; and however learned and wise you may be, do not set yourself up, but be humble, and remember that there have been many more wise and learned than you are, and that what gifts you have were given you to use to the good of your fellow men and the glory of your Creator.



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